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ART. I.—*On Injuries of the Spine, including Concussion of the Spinal Cord.* Illustrated with Cases. By JOHN A. LIDELL, M. D., Surgeon U. S. Vols., in charge of Stanton General Hospital, Washington, D. C.

INJURIES of the spinal column, with solution of its continuity, whether partial or complete, are very dangerous to life. This arises mainly from the important offices (functions) performed by the large nervous cord, which traverses the spinal canal from occiput to sacrum, and which, too, is apt to be injured by any lesion of its osseous case produced by violence. It is also highly probable that, at least in some instances, the ganglia of the sympathetic nervous system and their connecting cords, being located along the spine on either side of it, are involved in the injury to the spine itself, and on that account assist materially in producing a fatal result. And when we reflect upon the important relations which subsist between the sympathetic nerves and the viscera of the abdomen and the pelvis, especially the intestines, the kidneys, and the urinary bladder, we can readily understand why the destruction of a sympathetic ganglion may produce most disastrous consequences. But clinical observation, entirely aside from any speculation founded upon physiological and pathological knowledge, has abundantly attested the exceeding gravity of all mechanical lesions of the spine. For example, complete vertebral fracture occurs not unfrequently, and yet the number of recoveries from it on record is very small. Vertebral dislocation uncomplicated with fracture is of very rare occurrence, but the recoveries therefrom are much rarer still.

Fracture of the spinal column is, for the most part, dangerous to life in proportion as it occasions either *compression or laceration, or leads to inflammation of the spinal cord.* It may produce compression in two different ways. In the first place the whole thickness of the spinal mar-

row may be subjected to severe pressure, directly by the displacement of the fragments of the broken spine. Thus, a vertebra may be fractured horizontally through its body, and the principal ligaments being at the same time ruptured, the upper fragment of it, together with the superincumbent portion of the spinal column, may be thrust so far forward as to narrow the spinal canal very much at the place of fracture, and to subject the spinal cord to great compression or even laceration at the seat of displacement, producing thereby paralysis of all the parts supplied with spinal nerves issuing below the seat of fracture. In the second place, vertebral fracture with little or no displacement may produce compression of the spinal cord, indirectly, by extravasation of blood from the ruptured vessels of the theca vertebralis or of the cord. For example, a man may be violently thrown on the ground on his back, in wrestling. After recovering from the immediate effects of the shock he may be able to get home with but little assistance. Some hours afterwards it may be noticed that he is losing the use of his lower extremities, and the paralysis may go on increasing hour by hour until complete paraplegia is established, or, indeed, until death is produced. On making an autopsy it may be found that one or more of the inferior cervical or the superior dorsal vertebræ have been fractured with but little displacement, that the spinal dura mater has been lacerated, that the meningo-rachidian arteries and veins have been ruptured, and that they have poured their contents into the thecal cavity so as to come into relation with the spinal cord and compress it through most of its extent. The writer is able to present an interesting case of this sort, which occurred in the practice of Dr. John J. Crane, of New York city, to whom he is indebted for the notes of it.

CASE I. Mr. S., by profession an actor, about 50 years of age, sustained a violent injury of his spine, while wrestling on a Sunday afternoon. He was unable to rise after being thrown, and was laid upon a bench by those around. He was afterwards placed in a carriage and supported in a semi-recumbent position by some of his friends, and in that way conveyed to his home. Dr. Crane saw him first about 9 o'clock that evening. He was then unable to move his lower extremities, exhibiting all the symptoms of spinal injury, so far as they were concerned. His urine, however, was passed voluntarily, the bladder and abdominal muscles being not paralyzed. The upper extremities, also, were not paralyzed.

The next morning (Monday) the paraplegia had reached a higher point, and it was necessary to draw off his urine with a catheter. After this the paraplegia, continued to go on steadily, travelling up the trunk, involving the upper extremities, involving, also, all the muscles of respiration except the diaphragm, and finally reaching the origin of the phrenic nerves, he suddenly ceased to breathe. His bowels moved only once, and then by enema on Tuesday morning. He complained of pain only in the lower part of the neck, and exhibited signs of severe suffering when his head was moved. His mind was clear to the last moment. He died on Wednesday night, something more than three days after the injury. The autopsy disclosed a fracture passing through the fifth, sixth, and seventh cervical

vertebræ. There was not much displacement, certainly not enough to press on the spinal cord in any way, and not enough to be detected by external examination. The theca vertebralis was lacerated at the place of fracture, accompanied with the effusion of much blood into the spinal canal, compressing the spinal cord. It was evident that the paraplegia had crept up the body slowly, accordingly as the blood was effused into the thecal cavity, and that death had been produced by compression of the spinal cord from this cause. The theca vertebralis was lacerated to the extent of about one third of its circumference, but not any more than that. The blood was extravasated from the vessels of the cord itself (anteriæ spinales). The writer assisted at the autopsy, and thus became familiar with the case.

Again, even if the spinal dura mater be not lacerated, a quantity of blood may be extravasated from the ruptured thecal vessels between the bony wall of the spinal canal, and the theca itself, for its anatomical relations are such that but little force is required to separate it from its osseous case, and in this way the spinal cord may be compressed in a manner analogous to what happens to the brain when blood is extravasated from the middle meningeal artery, between the cranium and the cephalic dura mater.

With regard to *laceration* of the spinal cord, it should be stated that the cord may be partially, or even completely divided by a displaced fragment of the broken spine; but it is evident that, in order for such a result to be produced, the amount of displacement must be very great. In cases of *gun-shot fracture* of the spine, however, it happens not unfrequently that the bullet passes completely through the back-bone, dividing the spinal marrow either wholly or in part, in its course. The symptoms produced during life by division of the medulla spinalis are almost identical with those produced by compression, affecting the same tissue of the cord, in the same locality, and, therefore, it will generally be impossible to diagnosticate this lesion of the medulla during life except a wound of the soft parts be also present, of a character permitting exploration with the finger, and the detection of the division by the sense of touch. For such cases there is never any hope of recovery; for division of the medulla spinalis, whether partial or total, and in whatever way produced, always proves fatal sooner or later, according to the extent and locality of the division.

But cases of *vertebral fracture*, accompanied with *paraplegia*, do *sometimes* get well, provided the spinal cord is neither lacerated nor permanently compressed. A reference will be made to some cases of this sort in another part of this paper. There is good reason to believe that cases of vertebral fracture *not unfrequently recover*, provided that there is neither sufficient displacement of the fragments, nor sufficient extravasation of blood from the ruptured thecal vessels to produce any compression of the spinal cord, and it is not doubted that some of the cases of the so-called "strained back," produced by being thrown from a horse, by falling down stairs, and by violent blows on the back, belong to this category. But at the same time

it should not be forgotten that any fracture extending to the vertebral canal, even if it be only a simple fissure, is very dangerous to life.

*Concerning Inflammation of the Spinal Marrow as a Sequel to Injury of the Back-bone.*—While clinical observation has shown that inflammation of the brain and its meninges is exceedingly apt to follow injury of the cranium, it has also shown that inflammation of the medulla spinalis produced by injury of the vertebral column is of very rare occurrence. Indeed, but a comparative small number of cases of traumatic inflammation of the spinal cord are on record. Now this marked difference in susceptibility to attack from traumatic inflammation appears to be due in part to the large amount of fluid (cerebro-spinal) which intervenes between the spinal cord and its fibrous sheath (dura mater), and in which the cord is suspended as it were—whereby the shock of injury is diffused over a considerable space, instead of being concentrated at a single spot in accordance with a well-known law of mechanical philosophy—and in part to the much lower degree of vascularity of the spinal prolongation of the brain than of the brain itself.

The symptoms of traumatic inflammation of the medulla spinalis vary considerably according to the activity of the inflammatory process. For example, in one of Stromeyer's cases a bullet had entered between the arches of the third and fourth lumbar vertebræ, and there had become fixed. At first there were no severe symptoms, but suddenly violent pains came on with cramp in the extremities, having similarity to tetanus, and accompanied by delirium. The outer wound was dilated and the bullet easily extracted with the help of an elevator. The finger could then be introduced into the spinal canal; but the patient sank rapidly, and the autopsy showed inflammation of the spinal cord. (*Statham's Stromeyer*, p. 38.) In another case, related by the same surgeon, a bullet entering laterally had severely bruised the third and fourth cervical vertebræ, and had not been extracted; this was succeeded by inflammation of the spinal cord and brain; there was at first palsy of the injured side, followed by incomplete paralysis of all the limbs, and terminating fatally by coma. (*Op. cit.*, p. 38.) Mr. Alexander Shaw relates the case of a man who was brought to the Middlesex Hospital, having a dislocation of the left femur, complicated with extensive injury of the pelvis. A few days afterwards he was attacked with *acute pain in the back* and exhibited other symptoms of inflammation. He died, and at the autopsy it was found that besides a lesion of the left acetabulum there was a fissure of the sacrum which terminated at the vertebral canal of that bone. "Flakes of lymph, and increased vascularity in the membranes and among the roots of the cauda equina, denoted that acute inflammation had been set up by the fissure in the interior of the canal." (*Holmes' System of Surgery*, vol. ii. p. 224.)

Charles Bell narrates an interesting case of inflammation of the spinal

cord, produced by vertebral fracture, of which the following is a condensed account :—

A plasterer, aged 25, injured his back severely in the lower part of the dorsal region with fracture, by falling from a height of forty feet, and was taken to the Middlesex Hospital. There was swelling over the lower dorsal vertebræ, and he complained of great pain in that locality. He was perfectly sensible, and had no paralysis whatever of the lower extremities.

He passed a restless night, and the next day continued to be in great pain, and also had persistent vomiting.

On the second day he had delirium ; pulse frequent and not full ; skin hot; feces and urine passed involuntarily.

On the third day, his restlessness and delirium continued, and he threw himself out of bed ; pulse 136 and weak.

On the fifth day, he sank into a state of insensibility, and died about an hour afterwards.

At the *autopsy*, the spinous process and the *body* of the eleventh dorsal vertebra were found to be fractured, but the spinal cord did not appear to be injured. A thick greenish-coloured pus lay between the theca vertebralis and the cord in the cavity of the spinal arachnoid. There was an effusion of serum between the membranes of the brain. (*Surgical Observations*, p. 138 et seq.)

In another case, reported by the same writer, a partial subluxation between the last cervical and the first dorsal vertebra was followed, on the eighth day, by general convulsive movements, accompanying inflammation of the spinal marrow, and the patient died a week afterwards of exhaustion, having not been paralyzed at any time. The autopsy showed a little subarachnoidean effusion of serum in the cranium, and an abundant deposit of pus within the theca vertebralis, lying between it and the spinal cord. (*Surgical Observations*, p. 146 et seq.)

The symptoms of acute traumatic inflammation of the medulla spinalis, deduced from the foregoing examples of it, are intense pain located in the spine, and aggravated by pressure or motion, more or less symptomatic fever, great restlessness, convulsive movements, delirium, and death, generally preceded by coma, with muscular paralysis, either partial or complete, of the bladder and of the extremities. The symptoms of chronic inflammation of the spinal cord, by which is meant an inflammation slow in progress and of considerable duration, are pain pretty constant in character, and referred to some part of the back-bone, liable to be increased by exercise, on which occasions tenderness under pressure at the seat of pain is especially manifest, there being but little or no febrile movement at the same time; disordered sensations, such as a benumbed feeling, formications and darting pains more or less extensively distributed through the parts supplied with nerves, which issue from the spinal marrow at or below the inflamed portion of it; muscular spasms, or occasional convulsive move-

ments denoted by involuntary twitchings and startings of the extremities; the patient has also a feeling of weariness and muscular debility especially in the lower extremities, which induces him to keep the recumbent posture most of the time. It has been supposed that the disordered sensations mentioned above denote an inflammatory excitation of the sensitive tract, and the convulsive movements an inflammatory excitation of the motor tract of the spinal cord.

*Concerning Dislocation of the Spine.*—Complete dislocation of the vertebræ, entirely unaccompanied with fracture, occurs but rarely; indeed, it is so seldom met with that some surgeons have been led to doubt whether it has ever been seen. However, there are a few well-authenticated cases of it on record, and this fact settles definitely the disputed question. The following example of it is condensed from the history of a case furnished by Mr. Lawrence: A robust young man, aged 22, while carrying a heavy load on the back of his head and neck, slipped in descending some steps, and fell suddenly on the buttocks without letting go his hold of the burthen. He was immediately deprived of sensibility and voluntary mobility in all the parts below the neck, and the movements of respiration were apparently performed by the diaphragm alone. He died on the morning of the fourth day afterwards, with symptoms of asphyxia and exhaustion.

*Autopsy.*—"No displacement or inequality could be discovered by external examination, when the body was laid on the face. After cutting away the muscles from the back of the spine, the cartilaginous surfaces of the superior articular processes of the fifth cervical vertebra came into view. They were exposed in consequence of the inferior processes of the fourth vertebra having been completely dislocated forwards, and remaining fixed in their unnatural position. The yellow ligaments connecting the laminæ of the two vertebræ (ligamenta subflava) were torn through, and the bifid apex of the fourth spinous process lay in close contact with the basis of the fifth. On the front of the column an unusual projection was observed, but the anterior longitudinal ligamentous expansion was entire. The body of the fourth was completely detached from that of the fifth vertebra, the connecting fibro-cartilage being torn through, and the body of the former projecting by its whole depth in front of the latter. In consequence of this displacement, the antero posterior diameter of the vertebral canal was lessened about one-third." (*Medico-Chirurgical Transactions*, vol. xiii., Part 2, p. 394 to p. 397. 1827.)

The vertebræ, in general, are interlocked with each other so closely that dislocation without fracture cannot occur unless the vertebral ligaments, such as the intervertebral substance, the ligamenta subflava, the supra and inter-spinous, the inter-transverse, and the capsular, are extensively lacerated.

Again, the greater flexibility of the spinal column in the cervical region predisposes to the occurrence of dislocation at that part in preference to either the dorsal or lumbar region, a circumstance which was originally pointed out by Mr. Lawrence.

Like vertebral fracture, vertebral dislocation destroys life, by producing compression, or laceration, or inflammation of the medulla spinalis, and the remarks upon these points already made in connection with vertebral fracture are, for the most part, applicable to vertebral dislocation.

*On Gunshot Fracture of the Spine.*—Mechanical injuries of the spinal column in civil life are mostly occasioned by strains, falls, and heavy blows on the back. But to these common causes of spinal lesions of a traumatic character there must be added, on behalf of the military life, especially in time of war, the wounds produced by firearms. When gunshot projectiles occasion fracture or any other lesion of the spinal column, they do it by penetrating the overlaying soft parts, and impinging directly against the bone, and thus it happens that *gunshot* fractures of the spine are generally compound, while those produced by falls, blows, etc., are generally simple in character. It is possible that the back-bone may be extensively fractured by a spent cannon ball or fragment of shell, without solution in the continuity of the skin, an accident which, in one instance, has come under the writer's observation with respect to the thigh-bone, but he has not yet known an instance of it occurring in the spine. Again, gunshot fracture of the spine, besides being compound, is generally attended with a greater amount of comminution than vertebral fracture produced by other forms of violence; for a musket ball, especially a conical one, usually breaks any bone which it fairly strikes into several or even many fragments. Also, laceration of the spinal dura mater (theca vertebralis) is more apt to be present in cases of vertebral fracture occasioned by firearms than in those occurring from other causes; and thus it happens, not unfrequently, that in cases where musket balls penetrate the back-bone deeply, or pass completely through it, a quantity of the cerebro-spinal fluid escapes through the hole made by the bullet, and continues to flow away afterwards as fast as it can be secreted. In this way, a very untoward complication is often added to gunshot fracture of the spine—a complication which hastens the fatal result in bad cases, and may positively determine a fatal result in certain cases wherein the spinal marrow itself is not injured, and the amount of displacement and comminution are not insuperable in the way of recovery. Again, musket balls passing through the spinal column not unfrequently cause a division of the spinal cord, either partial or complete. This laceration of nerve tissue may be effected directly by the bullet itself, or indirectly by forcing a detached fragment of bone violently across the cord.

The general symptoms of gunshot fracture of the spine are not essentially different from those which are present in other forms of that injury, and they are referable mainly to paralysis, either partial or complete (but commonly the latter), of all the muscular apparatus supplied with spinal nerves given off at or below the seat of fracture. In some cases, wherein the amount of displacement of bone and injury of the spinal marrow are

small, and the differential diagnosis might otherwise be difficult, it can be definitely settled by exploring the wound with the finger, when fracture, if present, will be readily detected. Digital exploration of gunshot wounds involving bone should never be neglected, and least of all in case of injury to the spine by firearms; for in them the highest interests of the patient and the reputation of the surgeon are deeply involved in the prognosis which he may give.

CASES II and III. A few cases of gunshot fracture of the vertebral column came under the writer's notice at the battle of Fair Oaks. All of them had been produced by musket balls, and exhibited paraplegia. In *two* of them the place of fracture was the lower part of the cervical region. In both of these latter cases, the upper extremities and all the other organs, and parts to which the spinal nerves are distributed having their origin at or below the place of fracture, were completely paralyzed both as to sensation and as to voluntary motion. The bladder was deprived of contractility, and no urine was voided without the aid of a catheter. Tne muscular wall of the abdomen was relaxed and flaccid. The apparatus by which the movements of respiration are performed was paralyzed, except the diaphragm alone. This muscle continued to act because the phrenic nerves have their origin above the place of injury to the spinal cord, and they were therefore intact. The costal parietes of the thorax were drawn inwards, as they are at the end of the movement of normal expiration. The contraction of the antero-posterior and transverse diameters of the chest appeared to be directly occasioned by the elasticity of the thoracic walls; the *intercostals*, the *levatores costarum*, and the *inspiratory muscles* generally, being at the same time paralyzed, and thus rendered impotent to oppose it. These two patients died asphyxiated, the one on the third and the other on the fourth day after injury. From the imperfect performance of the respiratory movements, a considerable portion of the pulmonary tissue became useless for the purpose of aerating the blood, and this fluid being unable to pass beyond the pulmonary capillaries until it is sufficiently aerated, it began to stagnate in the vascular tissue of the lungs (passive congestion), and this stasis of the blood continued gradually to increase until asphyxia and death were finally produced. In both cases the intellect was clear, and there were no head symptoms whatever, until the stupor of asphyxia advancing to a fatal termination made its appearance.

CASE IV. A robust man, aged about 30, while attempting to drive a peddler's wagon having a very high seat, on which he was sitting at the time, into a carriage-house having a rather low door, hit his head with great violence against a beam at the top of the doorway, which crushed him down into the seat. His head was bent forward and also low down for the purpose of escaping the beam at the time. He was immediately carried into the house in a helpless condition, and two hours afterwards the writer saw him. He then lay on his back, with the neck flexed forward, and he appeared to be in dread lest an attempt to move his head should be made. His lower extremities, trunk, and upper extremities were completely paralyzed both as to sensation and motion. His intellect was clear, and he expressed himself as free from suffering. He was breathing by the diaphragm alone, for all the other muscles of respiration were paralyzed. On examination of the spine fracture with marked displace-

ment was readily detected between the fifth and seventh cervical vertebræ. Treatment: He was catheterized, and directed to be placed on a soft bed; a milk diet was allowed. The attendants were especially enjoined not to attempt to raise or turn his head to give him food, or drink, or for any other purpose. It was also noticed that he had partial erection of the penis. The accident happened in the afternoon.

The next morning it was observed that sensibility had partially returned to the arms, but the paralysis as to motion was still complete. In other respects, his condition was unchanged. The urine was drawn off with a catheter in the morning and again in the evening.

On the following day he did not exhibit any signs of improvement. The urine had a strong ammoniacal odour although the catheter was employed both in the morning and again in the evening. The bowels had not moved. The abdomen was flaccid, and swollen from the accumulation of gases in the intestines. A terebinthinate enema was administered.

On the third morning he was much worse. His respiration was difficult, the movements being much increased in frequency, and accompanied with some moist rales. His lips were becoming blue. He was tympanitic. He sank rapidly, and died asphyxiated seventy hours after the accident.

A *post-mortem* examination could not be obtained.

CASE V. A healthy middle-aged farmer fell backwards from a load of hay in such a manner as to strike the ground with the back of his head and neck, the whole weight of his body being superimposed. He immediately lost the use of all his limbs. In that state he was picked up and conveyed to his home, where the writer saw him a few hours afterwards in consultation with Jenks S. Sprague, M. D., late President of the New York State Medical Society. He was completely paralyzed both as to sensation and voluntary motion up to the root of his neck, at which place fracture of the spine with a good deal of displacement was detected. He lay on his back breathing with the diaphragm alone.

The symptoms and progress of this case bear so strong a resemblance to the last that it is not worth while to repeat them. He died asphyxiated on the fourth day.

An *autopsy* was not allowed.

It is the belief of the writer that patients who have suffered a vertebral fracture in the lower part of the cervical region, associated with either complete division or severe and persistent compression of the whole thickness of the spinal cord at the same place, never survive the injury longer than a week, that death almost always takes place from asphyxia, and that it generally occurs about the fourth day after injury. But, as we descend from the cervical to the dorsal region, it is found that, other things being equal, the patient lives the longer the further the place of injury to the spinal marrow happens to be below the cervical region, because, under these circumstances, the respiratory movements become more fully performed, and the tendency to stasis of blood in the lungs becomes less in the same ratio. If, however, the place of injury happens to be in the lumbar region, the patient survives still longer, the nature of the injury being the same, because in this case the movements of respiration are not at all interfered with. For the purpose of illustration, it may be stated that in

a large majority of the cases of paraplegia accompanying vertebral fracture, admitted to our military general hospitals, the lesion is located in either the lumbar or inferior dorsal region, and this appears to be satisfactorily accounted for on the supposition that the cases of cervical and superior dorsal lesions do not, as a general rule, live long enough to reach a general hospital.

Gunshot fracture of the spinal column is apt to be complicated with gunshot injury of other important parts. For example, in cases of gunshot fracture of the dorsal region, it frequently happens that the bullet also wounds some of the organs contained in the thorax, and in cases of gunshot fracture of the lumbar region, some of the abdominal viscera are often wounded. The following case affords a fair illustration of lumbar fracture produced by small arms.

CASE VI. Private John W. Smith, Company "K," 116th Pennsylvania Volunteers, aged 19, of good constitution, received a very severe wound in the lumbar region from firearms, in action at Salem Church, Virginia, May 30, 1864.

He was admitted to Stanton General Hospital 4th June, 1864. The wound had been inflicted by a conical musket ball which entered about two inches to the left of the third lumbar vertebra, and passing obliquely forwards, upwards, and to the right, fractured the transverse process of the third lumbar vertebra, and passed through the bodies of the third and second lumbar vertebræ. It had not been extracted, and its situation could not be discovered. He has partial paralysis of the lower extremities. He has still the power to move his legs somewhat, and the sensibility in them is not entirely destroyed. He has diarrhœa with involuntary evacuations, and inability to void his urine. His general condition is feeble and unfavourable. Treatment: Simple dressings to wound, catheterization. Pil. opii, gr. j every two hours. Ferri et potass. tart., port-wine, and a nourishing diet. Directed special care to be taken for the prevention of bed sores.

*June* 8. Patient failing; diarrhœa has stopped; has some symptoms of peritonitis; the ischuria renalis continues; same treatment continued with fomentations to the abdomen.

12*th*. Patient continues to fail; the paralysis has increased, and the paraplegia is now complete; instead of retention of urine he now has enuresis; treatment unchanged.

14*th*. He sank, and died.

*Autopsy*.—On removing the lumbar and the two lower dorsal vertebræ, the bullet was found to have traversed as already stated. Besides fracturing the spine, it had passed through the right kidney, and was found lying loose near the spinal column. The peritoneum was inflamed throughout its whole extent. The intestines were in a state of approaching gangrene (inflammatory). The right kidney was mostly disintegrated. The bladder was highly inflamed, and filled with a bloody pus.

Ward No. 3. Acting Ass't Surg. C. R. Nelden, U. S. Army.

This patient died of traumatic peritonitis fifteen days after he was wounded, and, considering the injury of the right kidney, it seems wonderful that he lived so long.

*Diagnosis.*—The relations of the spinal column with the other portions of the body are important, and, at the same time, the spinal column is not so deeply covered with the soft parts but that the diagnosis in cases of vertebral fracture can generally be made without much difficulty. The attitude of the patient, and the sudden occurrence of paraplegia in connection with a severe injury of the back, will at once direct the surgeon's attention to the spine, and, indeed, the height in the trunk to which the paralysis extends will, in most instances, give him accurate information with regard to the particular part of the spinal cord which has sustained an injury. If now the clothing be cut off from the patient, and the spine carefully examined, more or less deformity, occasioned by the fragments having been driven past each other in opposite directions at the place of fracture, will in most cases be detected. In some cases the amount of displacement is so great that the deformity resulting from it is seen at a glance. In other cases it is so small as to require a close inspection of the spinous process and every other portion of the injured vertebræ that may be accessible to external examination to settle the question of fracture; and, if the amount of displacement be very small, the diagnosis may be obscured by some doubt. But this happens comparatively seldom, for an amount of violence sufficient to fracture a bone so large and so much strengthened by ligamentous tissue as a vertebra is, in a large majority of instances, also sufficient to produce an amount of displacement appreciable by a surgeon. In cases of gunshot fracture of the spinal column the exploration of the wound with the finger almost always suffices to establish the diagnosis beyond doubt.

*Prognosis.*—As already stated, the mortality among cases of vertebral fracture in general is very great, and the prognosis is, therefore, always bad. But when the *spinous process* alone is broken off and this lesion is not accompanied with fracture of the lamina or any other part of the vertebra, there does not appear to be so much danger to life. At least I have seen a considerable number of cases belonging to this category, and I cannot now call to mind a single patient having this lesion that did not make a good recovery." Stromeyer, also, says that, during the Schleswig-Holstein war, "Injuries of the spinal processes frequently occurred without serious consequences." (*Statham's Stromeyer*, p. 39.) This immunity of vertebral fracture, when confined to the spinous process, from a fatal termination can be satisfactorily accounted for by the fact that, in such a case, there is no solution in the continuity of the spinal column and there is no injury of the spinal marrow.

The gravity of the prognosis is influenced very much by the age of the patient, by the amount of injury sustained by the spinal cord, and by the particular part of the cord on which the injury has been inflicted. For example, death occurs most speedily and certainly when the cervical part is involved, and the patient survives the longest, and occasionally even gets well, when the lesion is located in the lumbar or the dorsal region. Again,

if the spinal marrow happens to be divided completely or lacerated extensively in any part of its course, there is no hope whatever of recovery; and if the whole thickness of the marrow is compressed *severely* and *persistently*, the patient likewise cannot get well. But if the amount of compression happens to be small and transient in duration, the patient may recover, and live many years afterwards. Mr. Alexander Shaw relates two cases of severe injury of the back, with fracture in the dorsal region, both of which got well, and were examined by him many years subsequently.[1] The first of them was that of a patient who, in his youth, suffered a fracture of the spine between the eighth and tenth dorsal vertebræ. After a long time and much suffering he recovered, with paralysis remaining, and was seen by Mr. Shaw, in perfect health otherwise, more than twelve years after the accident. (*Holmes' System of Surgery*, vol. ii. p. 226.) The other case was a man who received a fracture of the spine, and became paraplegic while yet young, who shortly afterwards recovered sensation and the power of voluntary motion in his limbs so as to be able to pursue an active occupation, who, after a period of seventeen years, had a return of the paralysis, and, lingering for five years in that condition, died. (*Op. cit.*, p. 228.) At the *autopsy* it was found that at the place of fracture (the fifth dorsal vertebra) "for two inches the substance of the cord had disappeared, and, in exchange for it, there was a confused structure composed of arachnoid membrane and pia mater, converted into a loose cellular texture, not unlike that of the axilla on its outside, but more firm and cord-like within. This fine fibrous and membranous tissue adhered lightly to the internal surface of the theca, which had not undergone any perceptible change, except that of being thrown into folds, and it connected the upper sound portion of the cord to the lower. Each end of these portions was soft and diffluent, but not distinguished by any marked vascularity." "It was distinctly observed that there was an absence of adventitious structures, the ordinary products of inflammation. The morbid change appeared to be in the nature of *softening*, or of a disintegration of the substance of the spinal cord from fault of nutrition." (*Op. cit.*, vol. ii. p. 231.) The pathological appearances revealed by the autopsy have been quoted at length on account of their exceeding rarity and intensely interesting character.

With regard to the influence of *age* upon the prognosis, it may be stated in a general way that after the middle period of life vertebral fracture is always fatal. The instances of recovery from that lesion belong to the period of youth and early manhood. This is doubtless to be attributed

[1] Dr. LENTE also reports two cases of fracture of the spine, both of which recovered. Vide *American Journal of the Medical Sciences*, vol. xxxiv., October, 1857, p. 361 et seq.

They were both males, and were engaged in useful occupations a couple of years subsequent to injury.

mainly to the elasticity and resiliency which belong to the spinal column in the early periods of life. Indeed, vertebral fracture with structural lesion of the spinal marrow almost never happens in childhood, a fact which can be satisfactorily accounted for by the elasticity and flexibility of the bones in general at this time of life. But increasing years bring with them increasing brittleness of the osseous tissue, and the consequence is that a degree of violence which in youth would produce vertebral fracture with but a small amount of displacement of the fragments and but little injury to the spinal cord, in age produces a much greater amount of displacement and a much higher degree of injury to the spinal marrow.

Gunshot fractures of the spinal column appear, in general, to be more rapidly fatal than those not occasioned by firearms. This may be attributed, firstly, to the fact that gunshot fractures of the spine are almost always compound, while other fractures of the spine are generally simple; secondly, to the fact that laceration of the theca vertebralis and escape of the cerebro-spinal fluid is more liable to happen in cases of gunshot injury; and, thirdly, to the fact that the same bullet that fractures the spine is very apt to inflict serious injury upon other organs. Leaving out of the calculation such fractures as involve the spinous process alone, the writer has never seen a case of gunshot fracture of a vertebra get well, and he might add that he has never seen life prolonged for a month after the infliction of that injury. For example: ten cases of vertebral fracture produced by musket balls, not including those wherein a spinous or transverse process only was broken off, have been brought to Stanton General Hospital, all of which have terminated fatally. One of them lived twenty-six days, another twenty-one days, another twenty, another nineteen, another sixteen, another fifteen, another thirteen, another eleven, and two others survived the injury but five days. In all of them the fracture was located in either the lumbar or the dorsal region, and in several of them the injury was complicated with a gunshot wound of other important organs.

In the British army, during the Crimean war, there occurred *ten cases* of gunshot wounds with fracture of vertebræ, but without lesion of the spinal cord, of which *six died* and *four recovered* so far as to be invalided; there also occurred *twenty-two cases* of gunshot wounds with fracture of the vertebræ and lesion of the spinal cord, *all of which died.*

The author of the Surgical History of the British Army during that period says: "All the fractures of the vertebræ were promptly fatal, except two among the officers and two among the men, all of which were either fractures of the transverse processes in the neck, or of the spinous process only. Even where the spinal cord, apparently, was not primarily injured, inflammation of it or its membranes was sometimes set up and quickly proved fatal." (*Medical and Surgical History of the British Army during the Crimean War*, pp. 336, 337.) As with us, the partial

or incomplete fractures of the spinal column afforded a large percentage of recoveries, but all the complete fractures proved rapidly fatal.

Mr. Bampfield, while speaking of injuries of the vertebræ, states that "the fatality is not so great when fractures have been occasioned by musket balls" (vide *An Essay on the Spine*, p. 168), but from the facts and reasons already presented the writer feels confident that Mr. Bampfield is mistaken.

*On Certain Injuries which cannot be Classified under the head of Fracture of the Spine.*—Other injuries are inflicted upon the osseous case which incloses the spinal cord by musket balls, besides a solution of its continuity sufficiently extensive to be fairly entitled to the appellation of fracture of the spine.

These injuries are *firstly, contusions;* a bullet may only hit a vertebra and thereby bruise it severely without comminuting or even fissuring it perceptibly to the unaided eye. A case of this sort, taken from Stromeyer, has already been alluded to while discussing traumatic inflammation of the medulla spinalis.

*Secondly.* A bullet not unfrequently passes through the posterior part of the cervical or the lumbar region from side to side, fracturing one or more spinous processes without injuring any other part of the vertebræ. Sometimes concussion of the spinal cord accompanies this injury, but in a very large majority of these cases the cord suffers in no way whatever. These cases almost invariably get well without difficulty.

*Thirdly.* The bullet occasionally penetrates the body of a vertebra and becomes imbedded in it, of which injury the following case is an interesting example:—

CASE VII. A robust young soldier named Thomas Durning, aged 19, belonging to the First Michigan Sharpshooters, was wounded in the loins severely, 24th June, by a minie ball, and brought to Stanton General Hospital July 1st. On examination it was found that the bullet had entered on the left side, over the posterior part of the crest of the ilium, and having passed upwards and inwards remained unextracted. He did not have any paralysis of the bladder or of the extremities. On the 4th he was violently attacked with tetanus, of which he died on the morning of the 5th.

*Autopsy* 10 hours after death. The bullet was found *lodged in the body of the third lumbar vertebra* on the left side. On exploring its track it was found to have *contused the anterior crural nerve* at its origin and the lower end of the left kidney. There was limited peritonitis, and a small collection of pus, say a drachm, about where the ball impinged against the peritoneum, at lower end of kidney. The intestines were not injured by the missile. There was nothing worthy of note in the appearance of the other viscera. Ward 7, Actg. Asst. Surg. W. B. DICK, U. S. A.

*Fourthly.* The bullet may penetrate as far as the vertebral canal and lodge therein. The next two cases, the notes of which have been kindly

furnished by Asst. Surgeon Wm. Thompson, U. S. Army, in charge of Douglas Hospital, afford examples of this lesion.

CASE VIII. Elias Hedding, aged 40, private Co. E, 149th Pa. Vols., wounded in Virginia on May 8th, was admitted to Douglas General Hospital May 18th, late at night, and died in a few hours. No record of his case exists, but at the autopsy the bladder was found over-distended, and his helpless appearance before death indicated paraplegia. The ball, a minie, entered the left side over the inferior ribs, and passing obliquely forwards, downwards, and inwards between the spinous process of the third and fourth lumbar vertebræ, fractured those processes to some extent, together with the laminæ of these two vertebræ, and penetrated the spinal canal, where it lodged.

CASE IX. William H. Chambers, age 20, private Co. H, 14th New York Heavy Artillery, was struck by a bullet in May, which entered at the spine of the right scapula, passed inwards, and lodged in the spinal canal. He was admitted to Douglas Hospital on the 20th, and died on the 27th. There was complete paraplegia and paralysis of both bladder and rectum. The bullet fractured the fifth rib, and caused an abscess between the lung and the thoracic parietes at this point, which contained about six ounces of pus. No general pleuritis nor pneumonia was discovered. The bullet carried away the posterior and inferior part of the eighth dorsal vertebra (right side), together with the inferior articular process of that vertebra. It also fissured the lamina and tore off a part of the spinous process of the same vertebra. It also carried away the superior articular process of the ninth dorsal and lodged in the spinal canal.

In each of these cases the bullet fractured divers portions of sundry vertebræ, but did not destroy the continuity of the spine considered as a whole. Both of them, strictly speaking, are cases of partial or incomplete fracture of the vertebral column.

*Treatment of Fracture of the Spine.*—Surgeons generally agree that no effort should be made to set a broken spine. It is known that a large amount of force would be required to reduce the displacement of the fragments. And it is believed that the employment of so much force would be quite as likely to inflict additional injury upon the medulla spinalis as to remove the compression already existing; indeed, it is thought that the efforts at reduction might readily convert a case of compression into one of laceration or complete division of the cord. It is also believed that, if reduction of the displacement should be effected, it would return again, because the relations of the back-bone are such as not to permit the application of splints, or of any other apparatus which could successfully keep the fragments in apposition. There is no doubt, then, that the dictates of surgical prudence and humanity both require that no attempt should be made to reduce a vertebral fracture.

But should any effort be made to relieve the spinal cord by cutting down upon the spine itself, and extracting depressed fragments of bone? This

operation, which was practised with great benefit by Louis in 1762, in France, has not unfrequently been repeated since that time, in both Europe and America; but, upon the whole, with so little success as to lead most surgeons to discourage the operation. After considerable investigation, the writer *has failed to find one completely successful case on record.* There are, however, several instances recorded in which a very gratifying degree of success was achieved. *Vide* that of Louis already referred to, and in American Surgery that of Dr. Alban G. Smith, reported in the *North American Medical and Surgical Journal*, vol. viii., 1829, p. 94 et seq.; that of Dr. H. A. Potter, reported in the *New York Journal of Medicine and the Coll. Sciences*, vol. iv., March, 1845, p. 174 et seq.; and that of Dr. H. A. Potter, reported in the *American Medical Times*, January 10, 1863, pp. 17 and 18.

It would appear from this that the operation of trephining the spine, although in general unsuccessful, should not be altogether discarded. The surgeon should certainly not cast it out of his consideration, when he is calling to mind the treatment which a special case of fractured spine may require.

Again, the treatment of vertebral fracture should be conducted with a view to prolong the patient's life. Care should be taken at every step that the injury of the spinal cord be not increased by the employment of any unnecessary violence in handling or moving the patient. After the receipt of the injury, the coat, waistcoat, and shirt should not be removed by pulling them off over his head, as generally practised; for, by taking them off in this way, there is great risk of increasing the displacement of the fragments, thereby increasing the lesion of the cord; but the clothing should be carefully cut off from him with a scissors or a sharp knife. In all cases of paraplegia produced by violence, the safest way will be to conduct the treatment on the hypothesis that the spine is fractured, until a contrary diagnosis is clearly established. For the purpose of removing the patient to his home or to the hospital, he should be carefully placed in a recumbent position upon a litter, or a door removed from its hinges. If the fracture be located in the cervical or the superior dorsal region, his head should at the same time be carefully steadied by pillows or cushions placed on each side of it. At the hospital, he should be placed upon a water-bed, or, in its absence, upon a soft mattress, for treatment, with a view to lessen the tendency to the formation of bed-sores over the sacrum and the hips, a very strong tendency to which will be present on account of the diminished vitality of the paralyzed tissues. Bed-sores in such patients do not heal, and generally expedite the fatal result considerably. Special attention should always be paid to the bladder. From paralysis of that organ, the patient cannot pass any urine of his own volition. The catheter should therefore be regularly introduced at suitable intervals twice a day, and the urine drawn off. The bowels, which are apt to become confined sooner or

later, will also demand attention. As a general rule, they should be moved by enemata; and if there is much tendency to the accumulation of flatus in the intestines, the enema should be stimulating in character. It will also be advisable to administer occasionally a cathartic by the mouth, for the purpose of clearing out the upper bowel. Particular attention should be paid to cleanliness. The surgeon should every day see for himself that the genital organs, the nates, the hips, and the sacral region are perfectly clean and dry, and that there are no dark-red spots indicative of the beginning of bed-sores. The attendants should be instructed not to disturb the broken spine while changing the patient's underclothing. These garments should be open through their whole length, so that they may be readily put on and removed again without raising him up. At the same time, the patient should be carefully supported by a diet at once nourishing and of easy assimilation. The bitter tonics, combined with iron, are also useful. If a tendency to the occurrence of inflammation of the spinal cord or its membranes is developed, it should be combated locally by leeching, followed by the persistent application of ice, and by the internal administration of a sufficient quantity of opium at suitable intervals to secure the quietude of the patient. This plan of treatment appears to be well adapted to prolong life in cases where recovery is not expected, and to promote recovery in cases which are not entirely hopeless.

*On Concussion of the Spinal Cord.*—It happens not unfrequently that a paralysis, more or less complete, especially of the lower extremities, is produced by injury of the spine, without the occurrence of fracture, or, indeed, of any perceptible lesion of the spinal column or of the spinal marrow. The term concussion of the spinal cord has been employed to designate these cases, because of the analogy they are supposed to bear to concussion of the brain. In both alike, a more or less complete arrest of special function is produced, without any visible injury to the nerve tissue. *Cerebral concussion produces* a state of more or less profound *unconsciousness*, and *spinal concussion occasions* a more or less complete *paralysis* of the parts supplied with spinal nerves, the filaments of which either pass through or are given off from the concussed tract. Perhaps the following case, extracted from the *Medical and Surgical History of the British Army in the Crimea*, p. 337 to p. 338, will afford a clearer view of what is understood by concussion of the spinal cord.

CASE X. "Private William Hamilton, 18th Regiment, was struck by a piece of shell, which broke his bayonet in its sheath, tore away his pouch, exploding the ammunition, and wounded him severely.

"On admission at the regimental hospital, there was a wound about one and a half inches long situated to the right side of the fourth lumbar vertebra. The finger could be passed from it across the spine towards the left side, and a probe passed readily in that direction to the depth of eight

inches at least, and seemed to indicate that a foreign body was lodged in that situation.

"The hips did not correspond in shape, and the lower extremities were paraplegic. Much swelling and inflammation of the parts followed, accompanied by fever. The wound commenced to discharge purulent matter on the second day, when the more urgent symptoms subsided, and the case progressed favorably till the 13th day, when increased inflammation and suppuration, with persistent paraplegia, appeared to demand more energetic treatment than had yet been adopted. An incision was made to permit the extraction of the portion of bayonet supposed to have lodged deep in the hip. No foreign body was, however, found, but the pain was relieved, and free vent was now given for the escape of matter. The muscles of the left thigh sloughed very extensively, the patient became jaundiced, and died on the 21st day worn out.

"On *post-mortem* examination, the muscular structures implicated were found to be sphacelated, and a considerable amount of sanious pus between their layers. The posterior portion of the right ilium was greatly shattered, and the sacro-iliac synchondrosis was completely separated. The abdominal organs were uninjured.

"*No fracture of the vertebra existed, nor were any appearances found in the spinal column sufficient to account for the persistent paraplegia.*"

The Italics are not in the original. Since concussion of the spine is *per se* but seldom fatal, and therefore the opportunities of investigating its pathological anatomy are much restricted, it has seemed to the writer that no apology would be necessary for quoting the foregoing case in detail.

Surgical authors describe an ecchymosed condition of the brain, and also of the spinal cord, as present in certain cases of concussion affecting these organs. For example, Bampfield says:—

"Concussions of the spinal marrow sometimes occasion extravasation of blood, or bloody serum, within or without the theca vertebralis; and, in addition to the usual loss of sensation and volition in the extremities, the respiration shall be disordered. These cases are frequently fatal.

"Dissection has disclosed extravasation of blood, in one or more clots or patches, between the spinal canal and the spinal dura mater, or in the cellular texture investing that membrane. All the membranes of the spinal cord have been found either separately torn up or ruptured, or the whole have been lacerated, and have allowed the medulla spinalis to protrude like a hernia, or to escape through the rent in a mashed condition." (*Bampfield's Prize Essay on the Spine*, p. 175.)

It cannot be doubted that, in at least some instances, this ecchymosis, this extravasation of blood beneath the visceral arachnoid membrane into the meshes of the pia mater (connective tissue), denotes a genuine *contusion* of the brain or spinal cord, as the case may be; and that in this way a positive pathological lesion, perceptible to the unaided vision, is superadded to the concussion. These cases of *concussion*, complicated with *contusion* of the nerve tissue, when the cerebrum happens to be the part involved, exhibit a marked tendency to the occurrence of meningo-cerebral inflammation and cerebral abscess.

The following case strongly corroborates this statement:—

CASE XI. *Gunshot Wound of Scalp; Death twenty-four days afterwards from Cerebral Abscess.*—Col. Farnham, of the New York City Fire Zouaves, was wounded at the battle of Manassas, July 21, 1861, by a spent ball, which hit his head, and knocked him off his horse. He was picked up insensible. The wound was small in size, superficial in character, and situated on the left side of the head, three inches above the meatus auditorius. It healed without any difficulty. The principal symptoms in his case, until near the close, were referable to concussion and irritation of the brain. He died on the evening of August 14th, twenty-four days subsequent to the infliction of the injury. It was thought that he would recover, until about four days before death. He was partially paralyzed on the right side (hemiplegia) toward the last. He was comatose in the last moments.

At the *autopsy*, made August 15th, by Dr. Goulay, U. S. Army, we found that the external wound was superficial, that the skull was not injured, that there was copious subarachnoidian effusion, that there was an unusual quantity of yellow-coloured serum in the ventricles, and that there was an abscess of the cerebrum situated directly beneath the wound of the scalp. This abscess was about the size of an English walnut, superficial in situation, and surrounded by softened cerebral tissue. The visceral and parietal arachnoid over the abscess were glued together, to some extent, by adhesive inflammation, so that, in endeavouring to turn back the dura mater while making the autopsy, though it was carefully done, the abscess was torn open. *There were also traces of an extravasation of blood, three or four weeks old, in the sulci of the brain, beneath the visceral arachnoid membrane over the seat of the abscess, and likewise at the anterior extremity of the left cerebral hemisphere. There was a flattened clot of blood, black in colour, and apparently three or four weeks old, in the fossa at the base of the middle lobe of the left cerebral hemisphere.* The dura mater, in relation with it, was somewhat thickened, roughened, and opacified.

*Contusion* is much more likely to happen to the brain than to the spinal cord, because, in the *first place*, the surface of the brain is in close relation with its firm unyielding osseous case, while the spinal cord is separated from its osseous envelope by a considerable space, occupied by the cerebro-spinal fluid; and because, in the *second place*, the brain is a more vascular organ than the spinal cord; or, in other words, the brain is much more abundantly supplied with bloodvessels, liable to be ruptured by any contusing force, than the spinal cord.

But contusion of either of these great nervous centres is not attended by a train of morbid phenomena peculiar to itself, and therefore it cannot be diagnosticated with perfect certainty during life. It is apparent at a glance that it cannot be produced unless concussion is at the same time occasioned, and for that reason contusion should be regarded as a possible complication in any case of severe concussion. Perhaps its presence may be reasonably suspected whenever concussion shows a particularly strong tendency to run into inflammation. But at the outset the surgeon cannot

decide whether the case is complicated with contusion, for the strength of the tendency to inflammation of the nerve-tissue and its inverting membranes cannot be estimated till the after progress of the case affords a fitting opportunity.

*Concussion of the spinal cord* has attracted a good deal of attention among the civil surgeons, and the consequence of it is, that most of the systematic works on surgery, of recent date, contain more or less complete accounts of it. (Vide *Erichsen's Science and Art of Surgery*, pp. 296, 297, American edition; also *Dr. Gross' System of Surgery*, vol. ii. p. 247; and *Holmes' System of Surgery*, vol. ii. p. 238 *et seq.*)

But although cases of concussion of the spinal cord are not unfrequently met with in military practice also, this pathological condition has not excited nearly so much attention among the writers on military surgery. For example, Sir George Ballingall dismisses the whole subject with a single brief paragraph. He says: "Wounds and injuries of the spine are in many respects allied to those of the cranium. They occasion transitory concussion, liable to end, like that of the brain, in inflammatory action." (*Outlines of Military Surgery*, p. 319.) Macleod makes no mention whatever of concussion of the spinal marrow in his *Notes on the Surgery of the War in the Crimea*, and Williamson is equally reticent on the subject in his *Notes on the Wounded from the Mutiny in India*. Even so acute an observer as Hennen neglects to call the attention of his readers to concussion of the spinal cord, unless he alludes to it in the following paragraph: "From severe blows or bruises on the abdomen very serious injuries are inflicted without the solution of external continuity, and even instant death is no unfrequent consequence. Dissection in some instances explains these cases; but in others we are left entirely in the dark, and until we can affix a more appropriate name we may apply the term concussion to them, as we do to the unknown cause of death in injuries of the head. Nor is the analogy so loose as might at first sight be supposed, for independently of the lesions of the organs contained in the two lower cavities, the *spinal marrow may be affected in a way beyond the reach of our senses to discover.*" (*Principles of Military Surgery*, pp. 447, 448.) The Italics have been introduced. The surgical historian of the *British Army in the Crimea* limits his discussion of the subject to the following brief remarks: "The functions of the spinal cord were occasionally destroyed temporarily, or even permanently, where no discoverable lesion existed, probably in somewhat the same way as concussion of the brain produces insensibility." (*Medical and Surgical History of the British Army in the Crimea*, vol. ii. pp. 337, 338.) Mr. Guthrie gives an extended account of concussion of the brain in his *Commentaries upon the Surgery of War;* but makes no mention whatever of concussion of the spinal cord.

The following cases have occurred under the writer's observation in military practice:—

CASE XII. *Concussion of the Spine occasioned by the Explosion of a Shell.*—Private William B. Morse, Co. A, 40th New York Vol., 20 years old, always healthy, light hair, blue eyes, nervo-sanguine temperament, above the average in point of intelligence, and a terrible stammerer, was admitted to Stanton General Hospital, June 15, 1863, from the Field Hospital of the Army of the Potomac, at Potomac Creek. He said that he had been injured in the battle of Chancellorsville, May 3, 1863, by the explosion of a shell (he thinks); that he was lying on the ground on his right side in line of battle, under a heavy artillery fire, when something hit him violently on the left side and knocked him senseless. When he came to, his mouth was filled with clotted blood. He spat blood for two days, with a cough which had not yet entirely left him. His left side swelled up and was tender from the armpit all the way down to the hip. He could not move the left leg at all (thigh included), and had but partial use of the right one. Sensation also was nearly abolished in the left lower extremity. The motion and sensation of the left upper extremity were considerably impaired. Had not had any difficulty in holding or in voiding his urine. He stated that the left side appeared to be badly bruised; but the skin was not broken.

When admitted to General Hospital the partial paralysis above mentioned still continued, and was most marked in the left lower extremity. He had dyspnœa and cough, but no expectoration. The left thorax was much shrunken, and tender under pressure. The left shoulder had fallen down a good deal below the level of its fellow on the opposite side. There was lateral curvature of the spine, and his posture in bed bore a strong resemblance to that produced by pleurosthotonos of the left side. Nothing abnormal was detected by auscultation and percussion. At this time there was no swelling or ecchymosis of the injured side, and no evidence that the ribs had been fractured. He complained of much soreness in the walls of the left thorax and the left side generally, and the motion of the left arm seemed to be much impaired on that account. His intellect was clear, and he presented no symptoms whatever diagnostic of a cerebral lesion.

He was thin and rather pale (exsanguinated); bowels constipated. He was manifestly suffering from the consequences of extensive contusion of the left side and concussion of the spinal cord. Treatment: six dry cups were ordered to be applied daily over the spine, bowels to be kept open with laxatives (pulv. aloes et rhei), and he was allowed a full diet.

*July* 1. The dry cupping seems to benefit him very much, and the paralysis is rapidly disappearing; directed the cups to be applied every two or three days instead of daily. He continued to improve.

*August* 15. Was up and going about on crutches. Discontinued the cups and prescribed acetate of strychnia in small doses. This remedy was discontinued at the end of a month, as it appeared to do him but little if any good.

During the fall and winter he continued to slowly improve, and by the middle of March threw his crutches aside, preferring now to walk with the aid of a cane only.

*April* 10, 1864. He stands erect; the falling down of the left shoulder, the shrinking of the left side, and the posture simulating pleurosthotonos have entirely disappeared. The left thigh is a trifle smaller and more flaccid than the right one. At times he has a feeling of numbness and tingling in the left arm, but none in the right one. At times he has the same abnormal sensations in the left thigh and leg, but not in the right. He

presents a curious limp in his gait in walking. His body sinks very low on placing its weight on the left limb, from deficiency in the power of the extensor muscles, as compared with that of the flexor muscles of the limb, to support the body at its proper height in walking, and thus a strange hobbling is produced, the like of which I have only seen in some cases of rupture of the ligamentum patellæ.

In this case there was concussion of the brain as well as that of the spinal cord. There was also severe contusion of the thorax, complicated with contusion of the lungs.

The great advantage derived from the application of dry cups to the region of the spine in the treatment of this case is worthy of special mention. Cupping, either wet or dry, according to circumstances, must be ranked among the most reliable of the means at our disposal for the arrest of inflammation in, or the removal of congestion from, the parts located within the spinal canal. The application of wet cups is especially adapted to the cases of inflammation of the spinal cord or its membranes, and that of dry cups to the cases of concussion; and whenever inflammatory action appears in a case of concussion of the spine the wet cupping should, as a general rule, be employed in the place of the dry.

Morse was discharged from the service on surgeon's certificate of disability, at Stanton Hospital. He had been treated in ward No. 10, under care of Ass't Surg. George A. Mursick, U. S. Vols.

CASE XIII. *Concussion of the Spine from Firearms, with Fracture of the Spinous Process of the Second Lumbar Vertebra.*—Private John Quaid, Co. F, 6th Michigan Cavalry, aged 18, and of sound constitution, received a severe gunshot wound of the lumbar region in action near Salem Church, Va., May 28, 1864. He was hit about two inches to the left of the second lumbar vertebra (middle line) by a minie ball, which passed transversely to the right, and somewhat obliquely forward, through the lumbar muscles, and escaped about five inches to the right of the median line. He fell down immediately, and on attempting to get up again found that his lower limbs were paralyzed (paraplegia). The paralysis was complete, both as to sensation and motion, and did not begin to disappear till after the lapse of five days. The bladder was also paralyzed, and he required catheterization for three days, the urine evacuated by the instrument being bloody. His bowels did not move for several days.

He was brought to Stanton General Hospital 4th June, 1864. His general condition was good, and he was rapidly recovering the use of his lower extremities, but there was still partial paraplegia. Examination showed that the spinous process of the second lumbar vertebra was fractured, but there did not appear to be any injury of the lamina, or any other portion of the vertebra. He complained of pain, referred to the right hip, and the paralysis was most marked in that locality. The cold water dressing was applied to the wound, and he was allowed a full diet.

*June* 17. Condition of patient good, and he is doing well.

19*th*. Removed a small fragment of the spinous process which has become detached.

*July* 12. Removed another fragment of the spinous process. The patient

is doing well in every respect. He can move his lower limbs freely as he lays in bed, but on endeavouring to stand upright he complains of weakness in the hips, and the trunk falls forward in consequence of it. He can walk with the aid of crutches. He complains of a queer benumbed sensation, which is confined to the right hip and to the right thigh.

21*st*. Orifice of exit nearly healed, but the orifice of entrance presents a sloughy appearance. No constitutional disturbance. Prescribed liquor potass. permanganat. f℥ij to fOj, as a wash.

28*th*. Sloughing has stopped, and wound granulating finely; lower extremities, and especially right hip, still weak, but improving, and he now walks pretty well with the aid of a cane only.

This was a case of gunshot wound of the loins, with fracture of the spinous process of the second lumbar vertebra, and concussion of the spinal cord. Attention is again invited to it, because concussion of the cord is not commonly seen in connection with fracture of a spinous process in military practice. The writer has examined a considerable number of cases of fracture of that process, and the foregoing is the only one among them attended with well-marked concussion of the spinal cord. There is no reason to believe that any other injury was sustained by the second lumbar vertebra besides the fracture of its spine.

The case also affords strong evidence of the small amount of danger which usually attends gunshot fracture of the spinous process of a vertebra, a circumstance which has already been mentioned.

The case is still under observation.

CASE XIV. *Gunshot Wound and Concussion of the Spine.*—Private Timothy Flearty, Co. A, 1st Maryland Cavalry, a middle-aged man, of good constitution, was admitted to Stanton General Hospital 12th December, 1862, having been wounded on the previous day by a conical musket ball, which penetrated the lumbar muscles a little to the right side of the spine, and produced paraplegia. On exploring the wound with my finger, I found that the bullet had passed forwards, somewhat downwards, and slightly inwards, exposing to some extent the body and the transverse process of the second lumbar vertebra. After careful examination, I failed to detect any fracture, and did not find the bullet. The paralysis of the lower extremities was complete, both as to sensation and motion. The urinary bladder was also paralyzed, and he could not pass any water without the aid of a catheter. His general condition was favourable. He was in good spirits, and had an excellent appetite.

Treatment, simple dressings to wound, a nourishing diet, and catheterization twice daily, especial pains being taken to prevent the formation of a sacral bed-sore at the same time.

During the month of January, 1863, he began to recover the power of moving his limbs in bed to some extent.

*February* 1. The bladder has recovered its tone, so that it is no longer necessary to use the catheter, except occasionally. During this month the paraplegia continued to slowly diminish. The bullet, a conical one, came away in the dressings, having gravitated down from its place of lodgment as the patient lay in bed.

During the next month (March), the paraplegia continued to disappear. The electro-magnetic battery was employed with apparent benefit at this time.

*April* 6. He begins to sit up. He can stand with a little assistance. He has difficulty in holding his urine on assuming the erect posture, which has probably been occasioned by the prolonged use of the catheter. The urine, also, is scanty. Prescribed the following mixture: ℞.—Tinct. cantharidis f℥j; extract. fluid. buchu f℥iv; spirit. ether. nitric. f℥iv; potass. acetat. gr. xxx. Cochlearia parva quater qua que horâ sumenda. In a few days, the urinary difficulty was removed.

14*th*. Ordered tinct. ferri muriat. gtt. x, ter in die. Under this treatment he steadily, although but slowly, improved, and the remedy was continued for several months. At the advent of summer, he began to walk with crutches. At this time he was troubled with constipation, which was ultimately relieved by the following recipe: Extract. colocynth. comp., pulv. aloes, ää gr. xxiv; pulv. ipecac. gr. ij. Divide in pil. No. 12. Dose, two pills pro re nata.

*August* 15. He left the hospital on a furlough for 60 days. The wound is healed.

*October* 15. He returned from furlough improved.

*November* 19. The wound has reopened, and presents an indolent character. Prescribed for it a stimulating wash of the sulphate of copper gr. v to ℥j.

*January* 1, 1864. He can walk without crutches, but his step is tottering and feeble. He continued to slowly improve through the winter.

*April* 4. He now walks pretty well with the aid of a cane, but his lower limbs are still weak. The wound reopens itself after variable intervals, and, after discharging a while, closes again.

*May* 3. He was transferred to General Hospital at Philadelphia, still improving slowly.

The *treatment* required by concussion is, in most respects, identical with that required by fracture of the spine. During the period of paralysis, in both alike, the same attention should be paid to the condition of the bladder, to the prevention of bed-sores, to the state of the bowels, and to supporting the patient by suitable alimentation. Severe cases of spinal concussion will also require the application of cups to the back, and, if the paraplegia is persistent, the employment of electro-magnetism, with the administration of strychnia. Iron and the bitter tonics will also be found useful.

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ART. II.—*Treatment of Fractures of the Femur by Extension effected by means of Weights.* By JAMES TYSON, M. D., Act. Asst. Surg. U. S. A., late Resident Surgeon Pennsylvania Hospital.

THE attention of the profession has been for some time called to a method of treatment for fractures in the shaft of the femur, of which the essential feature is extension in the line of the thigh's axis, by means of a weight, exerting its influence through a cord and pulley; and this with or without lateral support.

Having had peculiar opportunities of testing this apparatus, and supposing the literature of the subject to have acquired additional interest in consequence of a recent more general use of the plan, the writer has been induced to look it up to some extent, at least among American practitioners.

The first paper upon the subject, within the knowledge of the writer, was published by LUKE HOWE, M. D., in the *New England Journal of Medicine and Surgery* for July, 1824. His apparatus consisted mainly as follows: *First*, "of a pulley on a staff eight or ten inches long, to be screwed on the foot-piece of the bedstead." *Second*, of a gaiter for the foot, through which, by cord and attached weight, extension was to be made over the pulley in the axis of the limb. *Third*, of a counter-extending band for the perineum, connected by a strap with the head-board—counter-extension being divided between this and the inclination of the body towards the head of the bed; the latter accomplished by elevating the foot of the bed from four to eight inches. With regard to lateral splints, the writer remarks: "When this apparatus is properly applied, splints will not be found indispensable; yet it would be well to use them, of convenient length, over proper compresses and cushions, also the many-tailed bandage, or bandage of strips. To prevent the rotation of the limb by the pressure of the bedclothes, three pieces of board are to be made into the form of a cradle, without the bottom, and placed on the sides of the foot and leg, including the pillows and other compresses; a cleft must be sawed into the foot-piece to admit the passage of the extending cord." The advantages claimed for the apparatus are these: *First*, a diminished danger of perineal excoriations, counter-extension being obtained, for the most part, by the inclination of the body. *Second*, extension and counter-extension were made more directly in the axis of the limb. *Third*, less restraint in the motions of the body, which are admitted to considerable extent, without disturbance of the fractured limb.

But two cases are reported by Dr. Howe as treated by this apparatus. One a boy of 12 years, who, by the upsetting of a cart, had received an oblique fracture of the thigh, near its middle. The second, a case of fracture of the neck, in a lady of 74. The former recovered "without the least shortening or deformity." In the latter, in consequence of her advanced age and extreme emaciation, considerable ulceration of the back and sacrum was discovered on the twenty-eighth day.

Now, as the muscular resistance in a boy of 12 is but slight, as the favourable circumstances of youth are such as to insure a good cure by almost any apparatus, and as the second case proved a total failure, it is but reasonable to suppose the profession were not favourably impressed with the mode of treatment, and that few, if any, were induced to test it.

The next article we have on the subject is entitled a "*Method of Treating Fracture of the Thigh-Bone*, by WILLIAM C. DANIELL, M. D., of Savannah, Georgia [with a plate]," published in the *American Journal*

*of Medical Sciences* for August, 1829. The writer describes his apparatus as follows:—

"A piece of poplar plank, long enough to extend from just below the buttock to eighteen inches beyond the foot, was made on the surface slightly concave to receive the thigh; the upper end was cut in a semilunar form, to fit it the better to the buttock, and made six inches wide; the lower end was four inches wide. On each side of the lower end was attached a piece of board three inches high, extending up to the knee with gradually reduced height. A piece of board five inches high was then fitted in the lower end, at a right angle with the lower board. In the middle of the upper edge of this piece was placed a small wooden roller, with a concave edge, which was retained by a wire axis. The lower end of this splint, which projected beyond the foot of the bed, was secured by passing a screw through the bottom-piece into the foot-board of the bed. The fractured limb was then placed in this splint. The many-tailed bandage was applied over the fractured portion (the bones having first been placed in apposition), over which, at equal distances apart, and around the limb, four thin wooden splints, six inches long, were placed, and secured by muslin strips. A bag of dried moss was then applied on each side of the thigh, and secured by tapes passing under the board supporting the thigh, and over the limb. A silk handkerchief was then passed around the ankle, and tied at the bottom of the foot. To this projecting portion of the handkerchief was fastened a small flaxen cord; and that, passing over the roller placed in the end of the case, supported a small weight. A muslin bandage was passed around the chest, to which bandages were fastened for the purpose of fixing the body to the head-board, to prevent its being drawn down. *This, however, was soon found to be superfluous, as the weight of the body was quite sufficient for the purpose of resistance to the extending power, and was consequently discontinued.*"

The advantages claimed by Dr. Daniell were identical with those of Howe, as virtually was the plan, with this exception, that the former relies upon the resistance of the body alone as the counter-extending force. Both laid stress upon the advantages of "continuance of power" thus obtained, contending that it alone fulfilled that all-important indication, "a constant power in operation, to counteract the contraction of the muscles of the fractured limb." But that the weight used by each was insufficient for the majority of cases, we think, will appear from the accompanying report.

The cases reported by Dr. Daniell, as thus treated, were also two. The first, a child seven months old; in this case the apparatus being much simpler, but essentially the same. In the second case to which the apparatus was applied, as per description, the age is not given. In both cases the fractured limb united without any shortening or deformity. Though that both were unsatisfactory test cases need hardly be asserted.

Again, in the *Southern Medical and Surgical Journal* for February, 1854, we find an article "*On the Best Plan of Treating Fractures in Country Practice*," by A. L. DUGAS, M. D., &c.; and with regard to fractures of the thigh, we have the following:—

"Fractures of the thigh may be most easily managed by applying four wooden splints, a little shorter than the femur, around the thigh, and confining them by many-tailed bandages, suitable compresses having been, of course, interposed between the splints and integuments. In addition to these, a splint about four inches wide, and extending from the sides of the thorax to a little below the foot, will serve to keep the limb straight, and to maintain the foot in a proper

position. This splint should be secured by separate bandages passed around the abdomen, the thigh (over the short splint), the leg, and the foot. As *continued* extension in these cases is necessary, it may be effected by a weight, as suggested for fractures below the knee, *the resistance offered by the weight of the body being sufficient for counter-extension.* It is scarcely necessary to add that the patient should lie upon a hard bed, so that his body may be horizontal as possible, and thus prevent any bending at the seat of fracture. We thus avoid the chafings or abrasions so commonly attending the use of splints that bear upon the perineum or axilla."

It will be seen that here, also, the resistance offered by the weight of the body alone is considered sufficient for counter-extending purposes.

No cases are reported by Dr. Dugas, and there is, of course, no proof of the practical utility of his "plan," except the presumption in its favour as emanating from an eminent and experienced surgeon.

At a stated meeting of the New York Academy of Medicine, held March 20th, 1861, Dr. GURDON BUCK read a paper upon "*A New Method of Treating Fractures of the Femur,*" suggested by its successful application to the treatment of Morbus Coxarius, by Dr. H. G. DAVIS, of New York City.

The medium of extension is adhesive plaster, applied as for a Physick's Desault, while the limb is covered by a bandage as far as the plaster extends. Around the block placed in the loop thus formed is passed an elastic rubber band as an extending cord.

"A strip of inch board, three inches wide, is fastened upright to the foot of the bedstead, and perforated at the height of four or five inches above the mattress. Through this hole the extending cord is to be passed, and on the further side of the strap a screw pulley should be inserted at the proper level, over which the cord with the weight attached is to play. The foot-board of the bedstead, if there is one, may be perforated at the proper level, and the screw pulley inserted at the further side of it, so as to answer equally well. The coaptation splints, which may be of the ordinary sort, should be secured by those elastic bands like suspender webbing, fitted with buckles; these have the advantage of keeping up uniform concentric pressure, as the limb diminishes from the subsidence of swelling. Counter-extension must be maintained by the usual perineum band lengthened out in the direction of the long axis of the body, and fastened to the head of the bedstead. A thin, wedge-shaped hair cushion, to raise the heel above the mattress, and a bag filled with bran or sand, to place on the outside of the foot to prevent rotation outwards, complete the appliances requisite to carry out this method of treatment. There need be no delay in its application. The sooner after the occurrence of the injury the limb is put up, the better. The contraction of the muscles is thus antagonized from the outset, and the rough ends of the fragments are prevented from fretting the soft parts."

The advantages claimed for his method by Dr. Buck were: 1. The maintenance of uninterrupted and efficient extension, without producing intolerable pain, excoriations, sloughings, and tedious sores. 2. The diminution of the sufferings and the irksomeness of long confinement to one position. 3. Its cheapness and easy application. 4. Its permanence—thus calling less frequently for reapplication or adjustment.

Twenty-one cases were reported in full, at the time, but the journal upon which we are dependent for Dr. Buck's ideas does not give results ex-

cept so far as to state that "by actual measurement they are equal to any that have hitherto been obtained." Numerals are not given. Dr. Buck further states that he had a case then under treatment where the shortening was an inch, and he was afraid the limb could not be brought down any further. So that we may be justified in regarding one inch as the maximum.

In the course of the remarks elicited by the reading of the paper, it appeared that two gentlemen had recently used this mode of extension, one of whom had depended solely upon the elevation of the foot of the bed for counter-extension.

Hamilton, whose work is justly admitted as the leading American authority in fractures, alludes to this mode of treatment in the following words: "Having myself witnessed the operation of this apparatus, especially in some of the U. S. General Hospitals, I am prepared to attest its excellence and efficiency."

The weight extension was introduced at the Pennsylvania Hospital, in February, 1862, by Dr. EDW. HARTSHORNE, the attending surgeon on duty, with the aid of Dr. Charles C. Lee, U. S. A., then resident surgeon. Dr. H. had been so much pleased with its operation in some cases at the New York Hospital, as shown to him by Dr. Buck, that he encouraged Dr. Lee to resort to it in all the cases then presenting. His desire was to try the weight without any special mechanism, such arrangements and means being employed as were within reach in the wards at the time, and might be had in any private house. The first attempts were therefore experimental to some extent, and the apparatus was altogether elementary. This apparatus, in its primitive form, is thus described by Dr. Lee.

"Not being able to get the usual fixed pulleys, I suspended the weights simply over the back of a chair, though conscious that much of the advantage of the system was thus lost by friction. As regards the additional apparatus, simple lateral splints, Physick's Desault, and long fracture-box were used almost indiscriminately at first; but, after a little experience, the latter was thought preferable, as making the patient most comfortable, and giving the best results. In adults, counter-extension by an adhesive plaster band, passing around the perineum, and fastened to the top of the bed, was also used; in children, the foot of the bed was elevated in some cases, making the weight of the body the counter-extending force—in others, no counte.-extension at all was employed, and with just as good results, when the extending weight was kept clear of the floor. The extension band was simple bandage, generally, an elastic band being used in two or three cases only."

After October, 1862, the "Extension by Weights" ceased to be the usual method of the Hospital (though two or three cases were thus treated in the interval), until October, 1863, when the method was resumed, and thence followed the very satisfactory series of cases now about to be reported.

The apparatus, as now used, is not essentially different from that described by Dr. Lee, though a more extended experience has led us to modify it somewhat, and to discriminate more accurately such cases as

may require a slight alteration in the additional appliances, as lateral support, counter-extension, &c.

As there are no foot-boards, the *pulley*, which may be a common ribbon block slightly grooved on its periphery, is contained in a stand with a firm basis, which may be carried from bed to bed as required, or removed from the ward when not in use. The *medium of extension* is adhesive plaster, carried upon each side of the line within a short distance of the point of fracture, and forming a loop under the foot, to which is attached the cord with weight appended. The foot and limb are then bandaged until the plaster is covered in. The *weight* is variable, though for an adult from 15 to 20 pounds are generally sufficient—the former being sufficient for the majority of cases. In children, from 5 to 10 pounds will be required. The material used, of course, must depend upon convenience. Sand, shot, lead, iron, pebbles, flatirons, bricks, have served the purpose. Bricks have been found to answer quite as well as more expensive articles. But a part of the weight is used at the beginning; 10 pounds being usually appended at the first dressing of adults and from 1 to 5 in children. This is important, for so much weight at the beginning, even if well borne by the patient, will often draw down the adhesive plaster from its proper position. This, however, must depend upon the quality of the plaster, which might sometimes be improved. The band sustaining the weight is of inelastic material. We can conceive no advantage in yielding to the shaft in the slightest degree, whereas, on the other hand, there is an evident disadvantage attached to the use of an elastic cord, in this, that it impairs the uniformity and certainty of the extension.

As *lateral support*, sand bags are sufficient for many cases, but where there is a decided tendency to eversion, this must be overcome by other means. Nothing fulfils this indication so well as a long external splint, extending from the crest of the ilium to a short distance below the malleolus. It is possible to overcome this tendency by attaching a bandage to the instep, and tying it over on the opposite side of the bed. But the long splint is safer, and does not interfere with extension, or the comfort of the patient; or a long fracture-box, with a long outside piece reaching to the thorax, as suggested by Dr. Hartshorne, would, perhaps, be still better. *Counter-extension*, other than that effected by the weight of the body, aided by the elevation of the foot of the bed, is not necessary. Simple *retention* is all that is required. This, too, seems to accord with the experience of others who have extensively used the apparatus. I am informed by Dr. De Mola, late resident at Bellevue Hospital, N. Y., they there dispense entirely with the perineal band, the counter-extension being made by the body of the patient, by raising the foot of the bed on a couple of bricks. Yet there may be cases in which the perineal band will be of service.

The advantages of this mode of treatment are comprised in those above given, as claimed by Dr. Buck, being in no degree exaggerated by him.

Especially is this the case with the results, which we consider even better than those generally obtained, as we will endeavour to show before concluding. Too much stress cannot be placed upon the indication which is fulfilled by the *constancy* of the extending force. Whatever be the apparatus applied other than this, it is scarcely possible to visit the patient at ordinary intervals, but that readjustment is called for, the extension having become impaired. But in the weights we have a constantly extending force, directly in the axis of the limb, never diminishing, never varying, except when weights are added or removed; while the labour of readjustment, which, in a large number of cases is very considerable, is thus avoided.

The only objection there would appear to be, is, that motion being allowed to too great an extent, displacement of the fragments would be admitted. But this is only apparent. In the first place, the discomfort of the patient being very slight, the occasion for change of position does not occur—and in the second, the apparatus permits the motion of the limb to a greater extent without disturbing the fragments. For the extension remains constant and in one direction, whatever be the position of the body. Suppose the patient to rise—it is impossible for the upper fragment to slide down over the lower, for the weights keep drawing the latter down as the upper descends. And even supposing the patient to turn over on his face, which we have known boys repeatedly to do in a Physick's Desault, as also once with this apparatus, the extension is still there, drawing down in the axis of the limb, the extending cord being twisted instead of the bone, and really performing its work as efficiently as if the patient were on his back.

Again, supposing the weight found necessary be such that notwithstanding the elevation of the foot of the bed, the body is gradually drawn down towards the foot. The patient may be instructed at the beginning, and immediately learns to draw himself up by laying hold of the head of the bed. Nor is the perineal band necessarily omitted. If required to retain the body, it may be passed around one or both groins, and fastened to the head of the bed; interfering very slightly with the comfort of the patient, and it will aid in securing more perfect quietude of body. And it was as much with this latter view as with any other that it was used in one of the cases about to be reported.

CASE I. W. B., aged 75, slipping, fell upon a pavement with such force as to fracture the right femur in its upper third. This occurred on or about the 13th of September, 1863. A physician was called, who applied an apparatus answering in description to a Physick's Desault. But the old man, becoming impatient, refused to submit to treatment, and threw aside all appliances. He was admitted to the Pennsylvania Hospital October 1st, 1863, *over two weeks after the accident had happened*, with decided eversion, and shortening of $2\frac{1}{2}$ inches. Distinct crepitus was not elicited.

The usual vehicle for extension was applied, the adhesive strips extending only as high as the condyles of the femur, while a roller was applied from the toes to the same point. The leg was drawn out to the length of its fellow, and a weight of 9 pounds attached to the loop through the medium of the cord and pulley. The leg was supported laterally by long sand-bags, and the weight in a few days increased to 10 pounds. No perineal band was used, nor was the foot of the bed elevated, the patient's more than ordinary weight seeming sufficient for retention. He was remarkably quiet and tractable, and at the end of 31 days from date of admission, or 45 from the time of accident, all extension was removed, and the thigh bandaged and protected at point of fracture by a pasteboard splint; 47 days after admission all dressings were removed except a supporting bandage, and the patient was directed to attempt the use of the limb. On the 56th day after admission, he was discharged with but one-fourth of an inch appreciable shortening, walking quite comfortably with aid of a cane. On the 4th of March, 1864, 156 days after admission, patient returned to the hospital for inspection. Most careful measurement detected not more than one-half an inch shortening. He walked with a cane, and limped slightly. I saw him again, May 18th, 1864, when he informed me that by the aid of a heel half an inch higher than the opposite, he can walk with scarcely appreciable limp.

The result in the present case was the more gratifying from the fact that the age of the patient, his great obesity, and the considerable interval between the date of the accident and that of his admission, had caused us to prognosticate unfavourably. Accuracy of measurement, which is in all cases difficult, was here rendered still more so by the obesity of the patient; but in making the limb half an inch shorter than its fellow, we feel that we have given sufficient latitude to cover any error.

CASE II. P. G., a labourer, aged 26, fell from a tree, fracturing his right thigh at about the junction of the middle with the upper third. He was admitted to the Pennsylvania Hospital, October 19th, 1863, 20 hours after the accident. There was pain, with spasm of the muscles, and distinct crepitus, though there was shortening of only half an inch; making it probable that the fracture was nearly transverse. Extension was applied as in the preceding case, though the lateral support was by padded splints, the outer long, extending several inches above the crest of the ilium, and about the same distance below the external malleolus.

A weight of 9 pounds was applied, which was, two days later increased to 15, without discomfort to the patient. This was further increased to 19¾ upon the 30th, and on Nov. 2d, twelve days after the accident, 6¼ pounds were added, making in all 26 pounds. But with this weight, the body descended in bed, and the last addition was removed, leaving less than 20 pounds, while the foot of the bed was elevated. Under this extension, the patient remained forty-two days, at the expiration of which time it was removed, careful measurement making the limb between ⅛ and ¼ of an inch shorter than its fellow. The splints of binder's board were then applied to the seat of fracture, and patient retained in bed two weeks longer, after which he was directed to attempt some motion, retaining the lateral supports an additional week.

On March 5th, 1864, one hundred and thirty-eight days after the acci-

dent, he is walking without the aid of a cane, and limping slightly; repeated measurement detecting shortening to the amount of $\frac{1}{4}$ of an inch as a maximum. He informs me by letter, May 30th, 1864, that he suffers very little inconvenience from the limb, having the heel of his boot $\frac{1}{8}$ of an inch higher than its fellow, but thinks $\frac{1}{4}$ would be better; thus confirming the measurement.

CASE III. J. K., aged 7, fell from a flour wagon, Oct. 30th, 1863, fracturing left thigh somewhat obliquely, in the lower third, and was admitted to the Pennsylvania Hospital immediately after the accident. Extreme pain, crepitus, eversion and shortening were apparent, the latter being an inch. Extension was secured in the usual method, a weight of 10 pounds being attached. Lateral splints were applied as in the preceding case, the outer extending above the crest at the ilium, and below the malleolus. On the fourth day, the extension was increased to 16 pounds; but under this weight, the body descended towards the foot of the bed, while the little fellow was so restless as to extricate himself from the splints, and even to turn over in bed. Accordingly, with a view to prevent this, as well as to guard against the descent of the body, a perineal band was applied on each side, and attached to the head of the bed. With extension to this amount, he remained thirty-five days, being daily examined, and derangement of dressing, if existing, corrected. Extension being removed, on careful measurement no shortening appeared. The pasteboards were applied, and the patient retained in bed eight days longer, when he was directed to move about; and on Christmas day, fifty-six days after admission, was discharged with no shortening.

CASE IV. J. C., elocutionist, aged 45, while walking upon an icy pavement, on the night of Dec. 11th, 1863, fell upon the right hip. He was brought to the Pennsylvania Hospital early on the morning of the 12th, complaining of excruciating, deep-seated pain in the upper part of thigh, in consequence of which, no thorough examination could be made until ether had been administered. Shortening of but $\frac{1}{2}$ an inch was discovered, and on extending the thigh and rotating, a distinct crepitus was elicited. The age of the patient, the small amount of shortening, the peculiar manipulation rendered necessary to produce crepitus, and the deep-seated pain led us to suspect an intra-capsular fracture, or at least a fracture of the neck without the capsule.

An extension of $9\frac{1}{2}$ pounds was applied, which was increased to 15 in two days, while lateral support was furnished by sand-bags for about two weeks. But at the end of this time, there being no unnatural tendency to eversion, these also were removed. The extension was discontinued at the end of forty-four days, when shortening of $\frac{1}{4}$ of an inch was appreciable. The usual pasteboard splint was applied, and patient was directed to remain in bed two weeks longer, after which he began to move about on crutches. An examination eighty-four days after date of accident, made scarcely half an inch shortening. He was discharged March 28th, 1864, one hundred and seven days after admission, with $\frac{3}{4}$ of an inch shortening, walking with the aid of one crutch.

The result in this case would also appear to confirm the diagnosis. For, while the patient was much longer in regaining the use of his limb, as is always the case in intra-capsular fractures, so the shortening is no

less than at date of admission. But when we consider that in intra-capsular fractures the shortening, at first but slight, becomes greater until it has attained $2\frac{1}{2}$ or even 3 inches, the case is by no means an unfavourable one.

CASE V. Mary W., aged 44, fell down stairs on Christmas, 1863, and was admitted to the Pennsylvania Hospital on the same day, with some injury of her left thigh. Examination detected shortening of an inch, eversion and crepitus, showing a fracture, which was in the upper-third.

The extension apparatus was applied, with a weight of 10 pounds, increased in a few days to 15. The lateral supports were sand-bags, discontinued after four weeks. At the termination of forty-one days, extension was removed and pasteboard splints applied, there being apparently but $\frac{1}{4}$ of an inch shortening. Patient was directed to lie in bed two weeks longer, after which she began to move about. Examination seventy-seven days after the accident found the shortening $\frac{7}{8}$ of an inch. Extension was reapplied for two weeks, with little expectation of its lengthening the limb. And thus it proved. She was finally discharged, April 25th, 1864, walking with the aid of a crutch, but still having $\frac{7}{8}$ of an inch shortening according to measurement. Though the patient stated that as far as her own sensation could discern, the leg appeared as long as its fellow.

It will be noticed that there was a decided increase in the amount of shortening after the weights were discontinued. This we attribute to a premature removal of the extension, and allowing the patient to use the limb too early. In this case, the extension was continued but forty-one days, a period our experience has shown to be too short for adults, though it is considered sufficient by some authorities. The present report gives three additional cases of adults in which the extension was discontinued at the termination of six weeks; in each of which the shortening increased. In Case I., that of W. B., the increase was $\frac{1}{4}$ of an inch; in Case II., P. G., a healthy farmer, aged 26, the increase was $\frac{1}{8}$, and in Case IV., that of J. C., there was an increase of $\frac{1}{2}$. That just reported, it will be remembered, gave us $\frac{1}{4}$ at the time the weights were removed, and $\frac{7}{8}$ three weeks later, a difference of $\frac{5}{8}$. Some of these discrepancies may be due to errors in measurement, though we cannot account for all of them in this way.

This accords, too, with the ideas of those older surgeons whose actual experience in treatment entitles their opinions to great respect. Drs. Norris, Neill, and Hewson, of this city, inform me that they do not consider thighs firm at the end of six weeks, and that they have known them to "go back" in consequence of too speedy removal of extension. Dr. E. Hartshorne also says he has known cases of shortening and angular deformity, and even refracture, to occur from the too early use of the limb, and that he does not approve of the removal of splints until eight weeks, *at least*, have passed, that the patient ought not to walk until after sixty days at the earliest, and often not even then.

Hamilton, it is true, writes thus :—

"The extension may, however, be relaxed as soon, generally, as the 28th day, and the leg may be lifted daily after this, and the knee and ankle very gently flexed and rubbed, but never, so early as this, can the short side splints be abandoned with safety."

And we admit ourselves to have been misled by these words. Yet, a closer examination of the text will convince us that he is no advocate of the early removal of essential dressings. In the same paragraph he writes :—

"Still more important do I regard the continuance of the long side splint—no longer now as a means of extension, but only of retention—lest the weight of the limb should turn the foot gradually out, or occasion some other deformity."

And certainly, if the union is so imperfect as to permit eversion in consequence of the weight of the limb, it is such as to permit shortening by its use and by the contraction of powerful muscles.

Again,

"In the case of an adult, we ought never to encourage a hope that he can be released from his splints in less than eight weeks, although we may find it safe to remove them as early as the end of the sixth; *but the patient seldom wears the splints too long, while they are often removed too soon.* Remember that the fragments are, in nine cases out of ten, uniting side by side, and not end to end: the muscles which act upon them are powerful, and the weight of the limb is great, so that the time within which the limb can be trusted alone is never short."

We must bear in mind, too, that where splints are closely applied, as in Hamilton's apparatus, they act in maintaining the length of the limb after extension is discontinued, whereas, in the mode of extension by weights, lateral splints are but secondary, being never applied so as to produce compression.

Paget tells us that—

"The data, at present collected concerning the times in which the several parts of the reparative process are usually completed after fractures of adult human bones, are not sufficient for more than a general and approximate estimate. They may be thus generally reckoned. To the second or third day after the injury, inflammatory exudation in and about the parts; thence to the eighth or tenth, seeming inaction with subsidence of inflammation; thence to about the twentieth, production of reparative material, and its gradual development to its fibrous or cartilaginous condition; thenceforward its gradual ossification, a part of the process which is, however, most variable in both its time of commencement, and its rate of progress, and which is probably *rarely completed before the ninth or tenth week*, though the limb may long previously have recovered its fitness for support or other use. From this time the rate of change is so uncertain that it is impossible to assign the average time within which the perfection of the repair is, if ever, accomplished."

CASE VI. M. S., aged 37, fell heavily upon an icy pavement, Jan. 4th, 1864, and was admitted to the Pennsylvania Hospital upon the same day, with an oblique fracture of the right thigh. There was very decided eversion, with shortening of an inch, and spasmodic contraction of the muscles. The suffering was so extreme, and the demonstrations of the patient so violent, as not to permit the manipulation requisite to produce crepitus.

The usual mode of extension was applied with a weight of 9½ pounds,

which was, in a few days, increased to 15. Sand-bags formed the lateral support, but the case was one in which the indications were not fulfilled by them. The eversion was extreme, and could only be overcome by a bandage encircling the foot and carried to the opposite side of the bed.

Extension was continued fifty-six days, when pasteboards were applied, and he was retained in bed two weeks longer. He was discharged fourteen weeks after admission with about $\frac{1}{4}$ of an inch shortening. Saw patient May 19th, 1864; found him walking, still using crutches, though he scarcely appeared to depend upon them. He informed me that he had, since his discharge from the hospital, an attack of acute rheumatism, which had made him cautious in relying entirely upon the fractured limb. He also stated that one thickness of an ordinary piece of felt, placed in his shoe, made the fractured limb as long as its fellow.

CASE VII. E. B., aged 44, passing through a market on the night of February 23, 1864, ran against a butcher's block, and immediately fell to the ground; and on being raised to her feet, again fell instantaneously. She was brought to the Pennsylvania Hospital next morning. Shortening of $1\frac{1}{2}$ inch and decided eversion were apparent at once; and after etherization, by extending, and at the same time rotating the limb, crepitus was elicited. Thus were presented most of the peculiarities of a fracture of the neck of the thigh. 1. Production by a slight cause. 2. Patient, a woman, and over forty. 3. No external bruising or ecchymosis of the parts. 4. Crepitus only elicited by extending the limb, and rotating while extended.

The usual apparatus was applied, a weight of 10 pounds being attached. And as there was such decided eversion as could not be controlled by sand-bags, a long external splint was applied, extending from above the ilium to below external malleolus. In three days the weight was increased to 16 pounds, and the foot of the bed elevated to secure better retention. At the end of twenty-three days after admission, leg seeming a little short, $4\frac{1}{2}$ pounds were added. With this weight, extension was continued fifty-six days. She was retained in bed two weeks longer, and then directed to attempt motion. I saw her May 31st, when she said there was no shortening apparent to her, though I have made it $\frac{1}{2}$ an inch in making out the average; this having appeared when the extension was removed.

CASE VIII. A. G., a healthy young labourer, aged 23, having fallen from a truck across a railroad, was struck by the wheels of another following that from which he fell. He was admitted to the hospital March 11th, 1864, soon after the accident, when examination revealed a fracture of the right femur, at the junction between the upper and middle thirds. There was eversion, distinct crepitus, and shortening of $1\frac{1}{4}$ inches, while the upper fragment was tilted outwards and slightly upwards. An extension of 10 pounds was applied in the usual manner, and a long external splint adjusted. The weight was increased to 15 pounds in the usual time, and the foot of the bed was elevated. Ten days later, the leg appearing a little short, one pound was added. This weight was continued sixty days, when, on measuring, no shortening appeared. Saw him May 31st, 1864. He was moving about, and there was no shortening.

CASE IX. On the evening of March 14th, 1864, J. W. A., aged 5 years, was admitted to the Pennsylvania Hospital, with a fracture of the left thigh, middle third, produced by falling from a pile of boards. There were the

usual signs of fracture, with shortening of $\frac{5}{8}$ of an inch. The "extension by weights" was applied, $2\frac{1}{2}$ pounds being appended, while the thigh was supported externally by a sand-bag. In twenty-four hours the weight was increased to $4\frac{3}{4}$ pounds, which was further increased to 8 pounds. Extension was continued fifty days, and at the end of sixty, all dressings were removed, when accurate measurement detected about $\frac{1}{4}$ of an inch shortening, though the little fellow was discharged five days later, walking without the aid of a crutch, cane, or support of any kind.

CASE X. E. J., aged 7, was admitted February 25th, 1864, with an oblique fracture of the right femur, lower third. The limb was $1\frac{1}{2}$ inch short. The usual apparatus of weights was applied with lateral splints, which were replaced by sand-bags after two or three weeks. Extension was continued fifty-six days, when pasteboards were applied and the patient kept in bed two weeks longer. He was discharged May 9th, seventy-four days after admission, with no shortening.

CASE XI. Wm. H., aged 12, was run over by a cart, fracturing the right femur at the junction of the middle and lower thirds, for which he was admitted March 3d, 1864. There was shortening of $1\frac{1}{4}$ inch, with decided eversion. The usual extension was applied, and sand-bags as lateral support. This was continued fifty-six days, and the patient was retained in bed fourteen days after its removal. He was discharged sixty-seven days after admission, with no shortening.

CASE XII. C. S., aged 7, was admitted April 6th, 1864, with a fracture of the right thigh, having been run over by a furniture car. There was $\frac{7}{8}$ of an inch shortening. Extension by weights was applied with lateral splints, which were soon replaced by sand-bags. Extension was continued but five weeks, though the little fellow was retained in bed over three weeks longer. I saw him May 31st, when there was no shortening.

It would appear from this and two or three other cases reported, that it is safe to remove extension in the case of children, at an earlier date than in that of adults. This we believe to be the fact, and evidently with reason, for, besides having the increased reparative power of childhood, there is less muscular resistance to a good apposition of the fragments. For Cases X., XI., and XII., I am indebted to Dr. Elmer, present Resident Surgeon at the Pennsylvania Hospital.

The remaining cases occurred under the care of my colleague, Dr. H. C. Wood, Jr., and are reported by him.

CASE XIII. J. F., aged 14, came into the surgical ward of Pennsylvania Hospital, September 19th, 1863, with his left femur broken through its middle third. There was $1\frac{1}{4}$ inch of shortening.

*Treatment.*—Physick's Desault's apparatus was placed on him. He was thus treated until October 2d, when it was found that there was an inch of shortening, and extension by weights was substituted.

*Result.*—He was discharged December 1st, 1863, running about with crutches. The shortening was $\frac{1}{8}$ of an inch.

CASE XIV. M. McK., a school-boy, aged 9 years, came into the surgical ward of the Pennsylvania Hospital, September 30, 1863. His left femur

was broken at the junction of the upper and middle thirds. There was an inch and a quarter of shortening, conjoined with the usual symptoms of fracture. There was no injury to the soft parts. There was a marked tendency to eversion of the foot.

*Treatment.*—Extension by weights, with a short sand-bag and a short external splint reaching as high as the knee bound to the leg. A bandage was also thrown around the foot, and fastened to the side of the bed in such a way as to draw the toes in and the heel outwards.

*Result.*—He was discharged December 3, running about without crutches. The shortening was a quarter of an inch.

CASE XV. A. M., a school-boy, aged 9 years, came into the surgical ward of the Pennsylvania Hospital, October 1, 1863. His femur was obliquely fractured through the middle third, with two inches of shortening, and the usual signs of fracture. There was no injury to the soft parts.

*Treatment.*—Extension by weights, with a short external splint reaching nearly to the point of fracture, with the toes drawn inwards and the heel outwards by means of a bandage, to counteract the marked tendency to eversion of the foot.

*Result.*—He was discharged December 2, 1863. He was able to walk without crutches, and there was absolutely no shortening of the limb; the cure was perfect.

CASE XVI. B. McC., a labourer, aged 45, came into the surgical ward of the Pennsylvania Hospital, December 19, 1863. He had a very oblique fracture through the lower third of the left femur. At the time of his entrance the shortening was fully two inches. The tendency to eversion of the foot was marked. There was no injury to the soft parts.

*Treatment.*—Extension by weights, with a bandage drawing the toes inwards and the heel outwards, and a sand-bag close along each side of the leg.

*Result.*—The extension was taken off the beginning of the ninth week. The union was very firm, with a rather large mass of callus. The shortening was fully three-fourths of an inch. He was discharged with this amount of shortening, March 19, 1864, without crutches, but limping.

CASE XVII. H. McG., a school-boy, aged 10 years, was admitted into the surgical ward of the Pennsylvania Hospital, with his left femur broken in two places by a fall on the ice. The lower fracture was transverse, through the condyles; the two fragments could be moved on one another, producing marked crepitation. The other was oblique, through the middle third. The shortening was an inch and a half. The soft parts were not injured. No complications.

*Treatment.*—Extension with sand-bags, and the bandage around the toes and heel.

*Result.*—The extension was taken off at the end of the eighth week. Union was perfect. Some stiffness and pain in motion of the knee-joint, but no permanent injury to the joint. The shortening was a full eighth of an inch. He was discharged April 7, 1864, walking without the aid of crutches. One-quarter of an inch was recorded as the amount of shortening.

The tentative character of the treatment in many of these cases will be

apparent to the reader. This was necessary; for the writer did not know what had been written upon the subject until the treatment was terminated in the majority of the cases, and he had concluded to look up its literature. Especially was this the case with respect to the weight necessary to accomplish the best results. We are confident that that employed by each of the gentlemen quoted was insufficient for the purpose. It has been before said that about fifteen or twenty pounds will generally be sufficient for adults, from one to ten for children. But no rule can be adopted. Sufficient weight should be used to bring the limb down to its proper length. It has been suggested that "were there applied a trifle too much weight, the object would be defeated by absolute separation of the bone." There is no danger of this. Very many pounds would be required to extend muscles beyond their normal length; more than could be applied, for other reasons, by this or any apparatus. Muscular fibres are contractile, but not elastic, and we believe they would rupture before they would admit of such elongation as to cause an absolute separation of the two fragments.

There are included in the report seventeen cases, between the ages of five and seventy-five, presenting many varieties of fracture of the femur. Six are without any shortening, though this number includes but one adult. This is but a further confirmation of the well-established conclusion that the original length of the limb is rarely restored after fractures of adult femurs; though in children it is not uncommon, as also appears in the present report.

The range of shortening was from 0 to $\frac{7}{8}$ of an inch, while the average shortening in the whole number of cases is less than $\frac{1}{3}$. Again, in ten cases, varying in age from five to seventy-six, treated by Dr. Lee in the wards of the Pennsylvania Hospital, the maximum shortening was $\frac{3}{4}$, minimum 0, average about $\frac{1}{6}$; making the average shortening in the twenty-seven cases thus treated at the Pennsylvania Hospital about $\frac{1}{4}$ of an inch.

According to an analysis by Dr. Buck, of New York city, in seventy-four cases of fracture of the shaft of the femur, treated by various methods at the New York Hospital, nineteen resulted in no shortening whatever. Of the remaining fifty-five, the average shortening was a fraction less than $\frac{3}{4}$ of an inch. The average shortening of all the cases, including the nineteen in which there was no shortening, must therefore have been a fraction greater than $\frac{1}{2}$. Our own report includes twenty-seven cases of all kinds, not omitting one or two of the neck, and the average shortening is but $\frac{1}{3}$ of an inch.

Again, in order to compare these results with those of the Physick's Desault, which, with some slight modifications, has been the usual apparatus of the Pennsylvania Hospital, we had desired to take, in the order of their record, the results of twenty-seven cases treated by the latter apparatus; but finding the record previous to the twenty-sixth case somewhat unreliable, we have assumed a twenty-seventh case with *no shortening*,

which is granting the best possible result. The average amount of shortening in the twenty-seven cases is $\frac{3}{8}$ of an inch. So that the results attained in the "extension by weights" are at least equal to those of the Physick's Desault, as used at the Pennsylvania Hospital, where, if anywhere, it is most accurately applied, repeatedly and carefully adjusted. And when we take into consideration the increased comfort of the patient, and the vastly diminished labours of the medical attendant, we see a great argument in favour of the universal use of extension by weights, until a more perfect apparatus is devised. And as regards deformity, alleged to result from this method, in one case only of those treated at the Pennsylvania Hospital was it at all appreciable, and that a case of rheumatic diathesis.

No special reference has been made to intra-capsular fractures, because our experience in the treatment of these cases has not been sufficient to justify it. Moreover, the difficulty of diagnosis is such, that its accuracy may often be questioned, *post-mortems* sometimes revealing error. So far, however, as a limited experience would warrant a conclusion, we deem the apparatus especially adapted to the treatment of this class of fractures. Dr. Swinburne, of Albany, N. Y., who prefers, in fractures of the shaft, a method of "simple extension" from the head to the foot of the bed, without any splints, treated three cases of intra-capsular fracture by weights, pulleys, and elevation of the foot of the bed. He writes: "Patients thus treated were even more comfortable than when lying in bed without any dressings at all, and certainly the results are more favourable; and some of my cases have resulted so well, that the gait does not discover any faulty condition of the limb, nor does measurement reveal more than from three-quarters to an inch of shortening, while the patient says there is no difference in the two limbs." We must not omit, however, the following statement of the same gentleman: "Although this method is applicable to the aged and enfeebled, it would be presuming too much to seek to apply it to fractures generally, and particularly those occurring in younger persons. From my own experience, it appears insufficient for the treatment of *any* but intra-capsular fractures."

Notwithstanding this statement, we think the results of the twenty-seven cases above reported, and the fact that it is now the established method at the New York and the Bellevue Hospitals, and has been very extensively and successfully employed in our army hospitals for compound fractures, justify a certain presumption in its favour. Whatever may be Dr. Swinburne's view with regard to other cases, however, he has certainly given us quite an argument in favour of the weights in the treatment of intra-capsular fractures, the only point upon which we were in doubt. In regard to compound fractures our personal experience is limited to one case, in which the simple extension by a weight, with sand-bags for side splints and a bran dressing for the wound were employed with the most encouraging success under Dr. Hartshorne's direction, during April, May, and June,

1864. The wound was a bad one, resulting from railroad injury, but the patient was eighteen years of age and previously healthy. The case afforded a striking illustration of the convenience and comfort of the method when combined with the bran dressing; but is incomplete in its history, as the patient was removed by his family before complete recovery. His convalescence was established, however, and he left the hospital with little shortening or other deformity.

In the above history and report, the writer has endeavoured to make as accurate and impartial an investigation of this subject as his facilities would permit. Fully appreciating the great difficulty necessarily existing in obtaining accurate measurements, he has in no instance trusted exclusively to his own, though oft repeated; but he has endeavoured to confirm them by the measurements of other medical gentlemen, and especially of the attending surgeons at different times on duty at the hospital; and wherever there have been discrepancies, he has always accepted that measurement which made the greatest amount of shortening.

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ART. III.—*Surgical Notes of Cases of Gunshot Injuries occurring near Chattanooga, Tenn., in the Battles of Sept., Oct., and Nov.*, 1863. By I. MOSES, M.D., Surgeon-in-Chief of General Hospital, and Medical Director of the Post of Chattanooga, Tenn.

HAVING received orders to report for duty as Medical Director of Chattanooga, which had been evacuated by the enemy Sept. 9th, 1863, I arrived after due preparations on Friday morning. I was there handed an order from Surgeon Perin, Medical Director, to make requisitions for the necessary supplies for establishing hospitals for 3,000 beds, and to fit up the buildings which had been erected by the Confederates for the reception of wounded.

I found a scant supply of bedding and hospital supplies for about 800 beds; bedsacks, but no hay or straw to fill them; no bunks or cots; no cooking vessels, except some camp kettles and mess pans which were brought up from Bridgeport in my wagons.

The buildings designated as hospitals consisted of thirteen wooden pavilions, five of which were two-storied, all without doors or windows or any appurtenances, they having been completely stripped by the Confederates before abandoning the place. The buildings were capable of accommodating about 50 patients; there was also a brick building, formerly a school-house, with two large rooms capable of holding about 40 or 50 more. A small building, capable of accommodating 120 to 140, without doors or

windows, and built as a reception ward to the main hospital, constituted all that could be considered as suitable for the purpose.

Another set of buildings on the outskirts of the town, built as an hospital, were not available, and were subsequently burnt down, being in line of fire from our guns.

The army was in line of battle, stretching from seven to fourteen miles in front, and in momentary expectation of a clash with the enemy, and, in fact, heavy skirmishing was going on during the afternoon.

I obtained an order from the commissary officer of the post, General Wagner, to take possession of any buildings, furniture, cooking utensils, &c., that might be required for the establishment of hospitals. On riding through the village I found several large storerooms and lofts on the main street which could be used as wards, and also one or two large private residences, which were taken possession of; and cooking apparatus was obtained. The Crutchfield Hotel, comfortably furnished, would also, if necessary, furnish quarters for 200.

On *Saturday*, 19*th*, the battle commenced and raged from right to left; towards afternoon the slightly wounded began to find their way in with innumerable stragglers. I received a note from the medical director directing preparations for the reception of 2,000 wounded. I could not make any further arrangements than those already provided with the very limited means at my disposal. The wounded, as they arrived, were fed and cared for, and such surgical operations performed as were necessary.

On *Sunday*, 20*th*, the battle was renewed with terrible fierceness on both sides, and resulted, as is well known, in disaster to our arms, the whole army only being saved by the invincible bravery of our men, led by Gen. Thomas on the left, who withstood the shock of overwhelming numbers.

All this day and the following night and next day the wounded kept pouring in, on foot and in ambulances. They were distributed to the hospitals, hotel, storehouses, private houses, until every nook and corner in the town was crowded. As medical officers were constantly arriving from the field they were put on duty.

On *Monday*, 21*st*, six divisions of the general hospital were organized with medical officers, dressings, medicines, and rations. The wounded, however, lay upon the floors, without any comforts, in their dirty clothes, with hardly a blanket to put under or over them. Their wounds were dressed and most of the necessary operations performed either by myself or other surgeons.

Two large private residences were converted into hospitals for officers, and were soon filled with about 200. As near as could be estimated, four thousand reported and were fed, and attended to as well as circumstances permitted. Over two thousand of the worst cases, with the field hospitals, tents, medicine wagons, and some fifty medical officers, had fallen into the hands of the enemy as they swept back our right wing.

On *Tuesday*, 22*d*, our army was in line, immediately in front of the town, expecting a renewal of the conflict. All the available ambulances and wagons were loaded with wounded, and, with such as could make their way to the rear on foot, were hurried across the pontoon bridge. Nearly all the officers and some twenty-five hundred men were dispatched, and only the worst cases detained, as also all the wounded prisoners, of whom there was a large number. All the wagon trains were crossed and every precaution adopted if a retreat had been necessary. It was determined to leave the worst wounded, and I was detailed with a number of assistants to remain in case of the final emergency.

The enemy, however, had suffered as severely as ourselves in killed and wounded, especially in officers of a high grade, and so far from renewing the battle, actually retreated; but finding that the field was abandoned by us, they reoccupied it and advanced to within a short distance of the town, where constant cannonading and skirmishing occurred for several days and nights. According to the best information, our forces amounted to about fifty-five thousand, while the enemy had at least seventy thousand. Our loss was: in killed, one hundred and twenty-five officers and four thousand one hundred and seventy-one men; in wounded, six hundred and twenty-four officers and nine thousand five hundred and ninety-two men—making the entire loss thirteen thousand seven hundred and sixty-three.

It is ascertained, beyond a doubt, that the rebels suffered equally in killed and wounded; so that the total loss on both sides would amount to over twenty-seven thousand five hundred, rendering the battle of Chickamauga the bloodiest of modern times, in proportion to the numbers engaged. Thus, if our numbers are correct, out of one hundred and twenty-five thousand men engaged, one in every four $\frac{54}{100}$ was killed or wounded.

At Solferino, where nearly 300,000 were engaged on both sides, 37,800 were struck by bullets.

During the three days' battle at Waterloo, the total loss of the English army was 8,000, while at the Crimea the loss of the British was 14,849—during its entire campaign—of whom 12,094 were wounded and 2,755 killed in action.

M. Scrive, of the French army, gives as the number wounded by gunshot from September, 1854, to July, 1856, in an averaged strength of 145,000 men:—

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| In officers . . | 1,625 | Enlisted men . . | 35,912 |
| Killed " . . . | 325 | " . . | 7,182 |

making a grand total of 45,034 killed and wounded during a period of twenty-one months, including several general engagements, and the final assault of Sebastopol.

A few days had sufficed to get our hospitals in good working order, and though we were poorly provided, yet we had obtained additional supplies

from the reserve wagons of some of the corps which had escaped the enemy. We had no luxuries in diet, and but a moderate quantity of stimulants. The Sanitary Commission, with its usual promptness and efficiency, provided us with muslin for dressings, underclothing, and some luxuries, but their stock, being limited, was soon exhausted. On the 27th the medical director converted several of the buildings into division hospitals, leaving only the division known as No. 1, the Crutchfield Hotel, known as No. 3, and the officers' hospital under my direction. This led to great confusion, as the wounded were indiscriminately placed in all the buildings, and, in the desire to separate them, men were moved from place to place greatly to their prejudice, while others could not be removed at all, so that division directors often had as many of others as of their own under their care. Again, wounded coming in were obliged to drive from place to place before being provided for. After a few days another change was made; another building, known as hospital No. 2, was turned over to me, with its medical officers and all the wounded from the several division hospitals were turned over to the general hospital. We had been able to get our bedticks filled with cotton, making very comfortable mattresses; and bunks were being made as rapidly as the quartermaster could procure lumber. The food consisted of the army ration, including a fair supply of fresh beef. An agreement having been entered into between the commanding generals for the exchange of wounded, a large number of ambulances were sent to the lines, and on the 29th nearly a thousand arrived, who were so badly wounded as to be unable to escape from the hospitals in the field. These poor fellows presented a sorry sight; many had not had their wounds dressed, which were consequently in a miserable, maggoty, filthy condition. The majority had been robbed of money, blankets, canteens, and jackets by the enemy, had been very scantily fed, and even the food sent by our commissary for them was partly diverted to other purposes.

*Oct.* 2. Another train brought in about twelve hundred wounded, most of them the most serious of surgical injuries, and in a still more deplorable plight than the others. As many as could be, were admitted into the general hospital, some into the division hospitals, and the rest into a field hospital, composed of tents, which had been put up on the south side of Tennessee River, and which was under a separate administration, and served as an entrepôt to those who started on their way to the rear.

I am satisfied that the plan of having division or corps hospitals after a battle is wrong in theory, and almost impossible in practice. It has been contended that the wounded are better attended to by their own medical officers than by strangers, but how rarely does a man fall under the care of his own regimental surgeon? The service in division hospitals is performed by medical officers detailed at large from the regiments composing the division, and they are thus detached from their regiments, which, in case of an advance or any strategic movements, are often many miles away.

Again, when large numbers are wounded, and are picked up on the field of battle, especially where the movement of troops has been rapid from flank to flank, the men of the same division may be strewn over the whole field, and it would be unwise to attempt to call out the different divisions and remove the wounded to their special hospitals. I have never seen this carried out successfully, but, on the contrary, it has usually led to endless confusion.

Again, no reliable or valuable record can ever be derived, when men are removed from hospital ,to hospital. After an engagement, one general hospital, under the charge of a surgeon-in-chief, of acknowledged administrative and surgical ability, should be established; this may be divided into any number of divisions, but all the reports, records, returns, and changes, should be controlled at the bureau or office of the chief surgeon. This gives harmony and unity to the whole. Certain accidents may be conveniently grouped under surgeons who are known to be particularly interested in them; greater attention and skill are thus often obtained than under other circumstances; reliable and valuable statistics may be accumulated; a far greater economy of medical officers, and medical supplies can be attained, and whatever is furnished of comfort or luxury, is equally distributed to all. There should be a quartermaster and commissary specially detailed to procure and furnish the necessary supplies in their respective departments, and the medical officers should not be required to devote their time, at this important moment, to hunting fuel and water, or, perhaps, killing their own beef, or rather the beef they find nearest at hand. There are numerous duties connected with the quartermaster's department, upon which the welfare and comfort of the wounded greatly depend, and if earnestly and cheerfully performed, greatly lighten the labours of the medical department.

Under the present organization, the surgeon in charge of a general hospital is commanding officer, as far as military jurisdiction requires; he is adjutant, quartermaster, commissary, ordnance officer, and, in many cases, has a command equal to a brigade; yet Congress and the country have not thought proper to increase the rank or pay of medical officers, however great or important the extent of their duties. I am not disposed to enter upon this subject, because, I regret to say, the course of medical officers in some cases has not been such as to win respect and confidence. Many ignorant and improper men have been admitted into the medical staff; the highest order of talent has not been procurable under the small compensation allowed, and political influence has entered too largely into appointments and promotions.

Occasional cases of wounds occurring on picket or reconnoisances, were admitted during the early part of October, and on the 29th the battle of Lookout Valley took place, in which the enemy was dislodged from import-

ant positions commanding the river and roads. In this engagement there were about one hundred and fifty wounded, a portion of whom were brought to the general hospital. Thus, almost as fast as we could send the wounded to the rear, their places were filled by others, keeping our hospitals almost constantly full. Indeed, so crowded were they for several days, that I greatly feared the appearance of gangrene and erysipelas, but, the wards having no doors nor windows, there was full ventilation; and the air could not become stagnant or mephitic, for a wind blew through every aperture night and day. The weather was dry and mild, but filled with clouds of dust until Sept. 30th, when rain set in towards evening, and fell in large quantities for two days, after which the temperature became cooler, but pleasant. Rain set in again Oct. 7th, but cleared after a few hours, and again on the 13th, and continued for three days, after which the air was pleasant; again on the 24th and on the 30th rain came down in heavy showers. The temperature during the nights was cool, and there being no means of heating the wards, our wounded complained of chilliness, but by hanging blankets on the side from which the wind blew, we were enabled to shelter the men without closing all the windows and doors; and to this circumstance we are no doubt greatly indebted for the comparative immunity from diseases of a low type. Very few cases of hospital gangrene or erysipelas occurred, and they readily yielded to treatment. We were able constantly to add to the comforts of our wounded, and they could not have fared better. We were at times scantily supplied with fresh beef and vegetables, and many of the delicacies, but this resulted from the destruction of a large wagon train by the enemy's cavalry, while on its way to the post, with a large supply of medical and sanitary stores. Though the army was for a short time on quarter rations, yet our wounded obtained a full share of the essential articles; occasionally they complained of insufficient food, but wounded men in a condition of convalescence always demand extra rations. We were able to obtain fresh bread nearly every day.

I must allude to the character of the surgical aid afforded us, after this battle. Men were sent from the North, from Missouri, Indiana, Kentucky, and elsewhere, who had been serving in hospitals, but who had no experience whatever in surgical practice. A delegation of twelve were sent from Indiana, only one of whom ever did duty, and he only for two days. More than one did not even know how to apply bandages. A most radical error is committed in sending to the battle-field civilians indiscriminately picked up, most of whom are inexperienced in military surgery, thus inflicting positive wrong upon the wounded soldier, whose greatest consolation is, that if he is wounded, he will be skilfully treated. These civilians, strangers to military customs, are troublesome and exacting; at a loss to take care of themselves, and do not enter upon their duties with that earnestness that is required; it is almost impossible to obtain from them written notes of important cases. Only those who are of known surgical ability should be

assigned to the important duties falling to the share of any army surgeon after a severe battle. Such officers are often allowed to remain in hospitals far in the rear, where the slightest cases only reach, and which require an inferior amount of skill. The severest cases, calling upon the highest attributes of an accomplished military surgeon, are necessarily detained in hospitals near the battle-field, and here the oldest and most experienced officers should be found.

While I speak thus of several, who reported to me for duty, I must, in justice, award what is due to the regimental officers who served in the hospitals with few exceptions, and to a few contract physicians, who performed their duties earnestly and well. Most of the regimental surgeons, however, returned to their regiments, and their places were supplied by acting assistant surgeons, as they arrived.

Early in November, all but the severest cases, amounting to about five hundred, had been sent to the rear, and as our principal hospital had become untenable, from the fact of its vicinity to one of our works, and having been struck by a shell, the patients were removed to the upper portion of the town, near the river, and it was arranged that all the cases should be transferred to Murfreesboro', where they would obtain the comforts necessary to their ultimate recovery. I was ordered to that post, in order that I might carry out the treatment in certain classes of cases, and complete a series of statistics on certain accidents, which I had accumulated. I regret to say, that this object was not accomplished; very few of the cases ever were sent to me, and consequently my labour in taking the notes of five hundred cases of the most severe character was rendered entirely useless. By this unnecessary scattering of interesting cases—the surgeon who has first charge ceasing to follow them to their final result—the only reliable means of obtaining valuable statistics are lost. Statistics are, at best, of little value, unless all the cases are treated under the same character of surrounding circumstances, but where surgical attendance, climate, different degrees of comfort, long and fatiguing transportation, irregular food, exposure to vicissitudes of day and night temperature, come in as disturbing causes, the rates of mortality are fearfully altered, and no true comparison can be made. Thus, in knee-joint cases, the result of those brought immediately to the hospital, those remaining on the battle-field for ten or twelve days neglected, and those in their inflammatory stage, driven in ambulances to the hospitals, and those again promising well, being put in cattle cars and rattled a hundred miles or more over a bad road, will hardly do to collect together, so as to determine the best course to pursue.

The hospitals not being organized previous to the battle there were no surgeons, stewards, clerks, or attendants to do the necessary work, and for nearly a week it was impracticable to register the names and wounds of

those coming in, or keep any accurate accounts of the surgical operations. For three days, I operated continually in all the hospitals, and the medical officers on duty also performed several operations. All the lighter wounded were sent across the river as soon as the necessary operations and dressings were performed; hundreds of balls were cut out from time to time, also grape-shot and fragments of shells, without any record being made. At least four thousand came to the hospital, out of which twenty-five hundred were considered capable of being sent to the rear. Nearly all the officers were sent in the first train of ambulances, as it was supposed that the enemy would follow and shell the town from the neighbouring hills which commanded it, and as a retreat of the whole army might thus become necessary, the commanding general was anxious that every wounded man should be hastened to the rear, if it were practicable, so that as few as possible should remain to fall into the hands of the Confederates as prisoners. Many were consequently sent who would have fared better to have remained, and several necessary operations were deferred until the officer or man should arrive at a safe place.

The enemy not having renewed their attack, a few days brought out attention to the administration of affairs, and my charge having been very much diminished by the establishment of division hospitals, I was able to collect the names and character of wounds of those in the hospital, and a few who had been sent to the rear, and most of those who had died, though I must be candid in admitting that there are very many unavoidable errors in the following statement of gunshot wounds.

The record embraces from September 20th to November 1st. Those received during the month of November are not included, I having been relieved from duty on the 15th; thus the period consists of a record of forty days; one of the most anxious and sad eras in the history of the Army of the Cumberland. Depressed by defeat, on half and quarter rations, exposed to heat and dust, or cold and rain, with only the shelter of their d'ebri tents, their uniforms in rags, many barefooted, the rear threatened, and even supplies cut off for a time, this brave army stood ready, in the presence of superior numbers, again to contest the possession of Chattanooga.

During this season of trial I never once heard a groan or complaint from wounded or healthy; all bore their deprivations with the truest spirit of patriotism. I cannot say too much in praise of this gallant army, with which I have been serving just one year.

There were received into the general hospital, consisting of three divisions and the officers' hospital, during the forty days, nineteen hundred and four cases, whose names and wounds were duly recorded and presented in the following—

*Statement of Gunshot Wounds received at Chickamauga and other Fields near Chattanooga, during the months of September and October*, 1863.

| | | No. of cases. | Amputations. | Excisions. | Sent to Gen. Hosp. in rear. | Died. |
|---|---|---|---|---|---|---|
| FLESH WOUNDS. | Of head | 49 | ... | ... | 40 | 1 |
| | neck | 40 | ... | ... | 28 | 2 |
| | thoracic parietes | 68 | ... | ... | 50 | 3 |
| | abdominal parietes | 26 | ... | ... | 9 | 5 |
| | back | 38 | ... | ... | 21 | 6 |
| | external genitals | 8 | ... | ... | 1 | ... |
| | upper extremities | 210 | ... | ... | 186 | 4 |
| | lower extremities | 647 | ... | ... | 595 | 10 |
| WOUNDS OF CAVITIES. | Of brain | 7 | ... | ... | ... | 2 |
| | lungs | 67 | ... | ... | 18 | 24 |
| | heart | ... | ... | ... | ... | ... |
| | other wounds of thoracic cavity | 13 | ... | ... | 2 | 9 |
| | stomach | ... | ... | ... | ... | ... |
| | intestines | 6 | ... | ... | 2 | 1 |
| | bladder | 2 | ... | ... | ... | 1 |
| | other wounds of abdominal cavity | 32 | ... | ... | 8 | 9 |
| GUNSHOT FRACTURES. | Of cranium | 11 | ... | ... | 1 | 6 |
| | lower jaw | 15 | ... | ... | 1 | 4 |
| | facial bones | 16 | ... | ... | 1 | ... |
| | clavicle | 3 | ... | ... | 1 | ... |
| | scapula | 13 | ... | ... | 13 | 6 |
| | humerus | 60 | 22 | 5 | 3 | 16 |
| | forearm | 44 | 1 | 3 | 17 | 2 |
| | femur — lower third | 36 | 1 | ... | 3 | 17 |
| | femur — middle third | 60 | 3 | 3 | 7 | 22 |
| | femur — upper third | 55 | 1 | ... | ... | 34 |
| | leg | 106 | 17 | 5 | 28 | 18 |
| | ribs | 4 | ... | ... | 2 | ... |
| | vertebræ | 14 | ... | ... | 2 | 4 |
| | other bones | 54 | 3 | ... | 33 | 1 |
| WOUNDS OF JOINTS. | Of shoulder-joint | 18 | ... | ... | ... | 7 |
| | elbow | 23 | ... | 3 | 12 | 2 |
| | wrist | ... | ... | ... | ... | ... |
| | hip | 17 | ... | ... | 1 | 13 |
| | knee | 65 | ... | ... | ... | 28 |
| | ankle | 27 | ... | ... | 7 | 5 |
| | other joints | 3 | 1 | ... | ... | ... |
| Contusions and injuries by spent balls | | 47 | ... | ... | ... | 1 |
| Total | | 1904 | 49 | 19 | 1092 | 273 |

Notwithstanding that our wounded were comparatively well housed and nourished, yet the cold and wet weather evidently depressed their vitality; while the necessity of closing up windows and doors interfered with a thorough purification of the wards, and thus, about the 15th of October, cases of hospital gangrene, erysipelas, and pyæmia began to occur. We lost many of our amputated from apparent exhaustion and inability to bear up against suppurative action. We had no luxuries, such as eggs, milk, fruits, and chickens, to tempt the failing appetite, which rejected salt

pork or beef; and no butter to tempt men to their bread, which they often refused. There was a scant supply of fresh vegetables, which I look upon as an indispensable article of diet for the wounded, as a scorbutic tendency is usually induced by their want, which retards or prevents reparative action at a time when it is called for in its healthiest degree. Good malt liquors are greatly to be desired, and are better than whiskey, which is often nauseous to delicate appetites. Canned milk should be added to the list of hospital stores, and allowed in full quantity. It forms the most nourishing food, and can be used in so many agreeable ways, combined with stimulants and farinaceous articles, with coffee and tea, as to add very much to the comfort, support, and ultimate recovery of bad cases. We were indebted to the Sanitary Commission for a moderate supply. Beef-essence and canned soups should also be supplied in full quantity. I verily believe that if half the money spent in drugs allowed by the supply table was expended in wholesome dietetic articles, our sick and wounded would fare vastly better, and many a life be saved.

I cannot allow the present opportunity to pass without noticing the great and palpable omission of all arrangements for the administrative service of general hospitals in our army. With few exceptions, the hospital stewards are an inferior class of men, ignorant of their duties in times of emergencies, careless and rough in their behaviour, not unfrequently intemperate and dishonest. The attendants are mostly the cowardly runaways from the battle-field, who are eager for an excuse to desert their posts, and avail themselves of the first opportunity to get to the rear and offer their services to the surgeon. The latter, finding himself without clerks, wardmasters, nurses, or cooks, is glad to put these men in those positions; but when the first confusion has subsided, these men are demanded by their regimental officers, and their places are not filled at all, or only filled after long delay, and then by the most worthless men, whom the company officers are glad to get rid of. After the battle of Chickamauga it was with the extremest difficulty sufficient men could be obtained to perform the most essential duties about a hospital. There was a constant angry correspondence between line and medical officers, and it was only after an order was issued by the general commanding, that all men on duty in general hospital should remain there for the present time, that brigade and regimental officers ceased sending guards to forcibly take away nurses and cooks.

It is surprising that a corps for special service in general hospitals has not been or is not organized. If at the present date, after three years of war, we have attained to an organized ambulance system, it is hoped that a hospital corps will soon be thought of.

In addition to the other diseases usually occurring, under adverse circumstances, in military hospitals, I have to add five cases of tetanus, of which

I have the notes, and which, to the best of my knowledge, were all that occurred in my service.

CASE I. Richard Leaming, Co. E, 87th Indiana, received flesh wound of right nates, Sept. 20; was brought to hospital same day; the ball was lodged in the muscles of the part, and, as there were no unusual symptoms, it was not disturbed. He remained comfortable until the 27th, when tetanic rigidity of the jaw set in, followed by opisthotonos, which became severe, and lasted thirty-six hours, when he died. He was treated by brandy, opium, and chloroform inhalation. The last only served to control excessive spasm.

CASE II. Wm. Benboe, Co. A, 39th Indiana, was wounded in the left elbow-joint, Sept. 20, and brought to hospital. The injury was so extensive that amputation was performed next day. He did well until Oct. 2, when he was seized with tetanus, which continued forty-eight hours, when he died. Same treatment as above.

CASE III. E. M. Padden, Co. F, 9th Kentucky, received a flesh wound through upper third of right thigh, Sept. 19, and was brought to hospital next day. Tetanic spasm set in on the 29th, at first chiefly confined to the wounded limb, but becoming general, with very marked trismus. He died after twenty-four hours of suffering. The same treatment pursued.

CASE IV. C. F. Flepp, 2d Missouri, received gunshot flesh wounds through the right shoulder and hip, Sept. 20, and was brought to hospital next day. He presented no unusual symptoms until Oct. 1, when tetanic spasms set in, and lasted for three days, when he died. Same treatment pursued.

CASE V. John Droster, Co. B, 9th Ohio Volunteers, received a flesh wound through right thigh, near the groin, Sept. 20. He was left in hospital on the battle-field, in the hands of the enemy, until Oct. 2, very much exposed to cold and wet, and with insufficient food. He was sent in with other wounded, and tetanic symptoms set in the same day. There was slight trismus and spasm of the wounded leg and thigh, which continued constantly increasing in severity for ten days, and finally terminated in marked opisthotonos. There were times when he ate well, and slept soundly for hours, and it was thought he would recover; but, in spite of enormous quantities of whiskey, opium, and chloroform, he died after ten days' agony.

Now, what is the cause of tetanus, and in what kind of wounds is it most frequent? We must acknowledge our total ignorance of its etiology, pathology, and therapeutics. We are only familiar with its symptoms.

It has been laid down by some authorities that the retention of balls or fragments of foreign matter in the vicinity of the nerve tracts is an exciting cause, but this is not borne out by the general history of cases, and occurred in only one out of our five cases; nor does it depend upon the severity of the wound, whether involving soft parts or bony tissue, bloodvessels, or nerves. Nor is it more frequent in wounds of any particular parts of the body. I have seen it produced by an insect "jigger"

getting into the feet. Neither does climate at all contribute to its frequency. Sudden changes from hot to cold, or the reverse, have certainly produced many cases, both in India, in Germany, and in the Crimea, especially in those who lay on the battle-field at night. Yet opposite extremes of heat and cold alone will produce it. Thus, in India, Africa, and the equatorial climates of America it is very common; while Dr. Kane informs us that he lost both men and animals from the same disease in the Arctic regions. There are certain localities in the temperate climates where it appears to have prevailed as an epidemic; this I have understood to be the case at a small village on the south side of Long Island, and where it was firmly believed salivation was a certain cure, though many died before it could be brought about.

In our cases, four were comfortably housed and cared for, and yet were the most violently attacked, while the fifth case, which was exposed to wet, cold, and bad food, was but mildly affected, and even promised recovery.

Fortunately, the number of cases occurring after a battle are few, for they are almost universally fatal. Various remedial methods have been resorted to by as many surgeons, but no one remedy has ever succeeded in a sufficient number of cases to become popularly adopted, and all authorities have reluctantly fallen upon the plan of overwhelming insensibility by the intoxicating influences of whiskey, opium, and chloroform. As long as the effects of these are kept up, the patient suffers less, sleeps some, and is comparatively free from spasm; but diminish the effect, and all the symptoms recur with increased vigour. Consciousness is often active until the last, but generally they become comatose or insensible to all external agents for several hours before death.

Our cases were attacked severally on the seventh, twelfth, ninth, tenth, and twelfth days, or averaging on the tenth day, and this is the usual period; but it has occurred as late as the twenty-first day.

No *post-mortem* examinations were made in any of the above cases; but from former examinations, and the record of other surgeons, nothing satisfactory has been found. Occasional redness, congestion, or slight softening of the spinal cord has been observed, but may these not be as well attributed to the effect of violent spasmodic action?

Of flesh wounds there were one thousand and eighty-six, being more than one-half of the whole number reported. There was nothing of interest in these beyond the vagaries found in the course of balls, such as the hole of exit being found at unusual distances from the wound of entrance, the ball having described curves or being turned in new directions by fasciæ. There were thirty-one deaths in this class, by tetanus, erysipelas, exhausting discharges from extensive shell wounds, &c.

Of the seven cases of wounds of the cavity of the cranium only one presented any point of interest.

H. C. Pierce, Co. B, 33d Ohio. Ball entered at outer side of left superciliary ridge, passed directly through the head, and out in the right temporal region, half way between the eye and ear; both eyes destroyed, the right protruding outside of orbit; patient is perfectly insensible; breathing stertorous; pulse 132, quick; is very restless, throwing his limbs about, and uttering loud cries. Wounded Oct. 27.

*Oct.* 28. Recovered his senses so far last evening as to be able to give his name, company, and regiment, and this morning answers questions intelligibly, but rather indisposed to talk; says he has some pain over the forehead; protrudes his tongue, which is dark.

Became comatose next day, and towards evening died. On removing calvarium, the ball was found to have entered the left temporal bone, passing up through the orbit behind the globe of eye, severing the optic nerve, fracturing the bones, through the sphenoid, upwards and through the right orbit, destroying the globe, and out at right temple. The under surface of anterior lobes of brain very much lacerated; thin layer of pus beneath the arachnoid membrane; cerebral vessels very much congested.

It is remarkable that, with so extensive an injury to the brain, he should have a return of consciousness and intelligence. I conversed with him, and his answers were slow but correct, and he expressed a desire for some particular kind of food.

Other injuries of the calvarium occurred, where fracture and some depression existed, yet without producing symptoms sufficient to call for trephining.

During the second day of the admission of cases, while operating upon some of the minor cases which could be attended to in the office, a man was brought, led by another, and placed in the chair. He had a staggering gait, was rational, but a little confused, and was evidently labouring under some concussion. On examination, I found the skull depressed and comminuted for the size of a twenty-five cent piece, driven into the brain, some of the substance of which came out with the loose pieces which were carefully removed; this was near the sagittal suture and in the right parietal bone. After the operation he got up and walked away. As there were no alarming symptoms he was sent to the rear.

Another case presented himself in the ward, the subject of it was a man sitting up near the fire and complaining only of slight headache and confusion. A depression of the size of a nickel cent existed in the anterior portion of the parietal bone on the right side. He eat and slept well, and was finally sent to the rear after ten days.

Sergt. Pfeff, 101st Indiana Vols., was struck in the head, Sept. 20th, by a minié ball, which passed through his felt hat, at the posterior and inner angle of the left parietal bone and glanced off. The blow knocked him down, without depriving him of his senses. Not a bad symptom followed. The bone along the track of the ball for an inch and a half, including the whole thickness of the skull, exfoliated. He was sent to the rear six weeks after the accident.

*Gunshot Wounds of Head and Face.*—Balls are driven through the bones of the head or face, tearing and crushing, producing frightful de-

formity of the human countenance, and yet few are fatal unless their track is so near as to produce secondary hemorrhage from sloughing of blood-vessels. Among the thirty (about) cases of wounds involving the bones of the face brought to us, a few presented an unusual interest. They were of the severest and most disfiguring character, and yet rapidly recovered. One died of secondary hemorrhage, after all apparent danger had passed.

Private Wm. Farr, wounded at Lookout Mountain, Oct. 28th. The ball entered on the left side of the face, just behind the angle of the inferior maxilla, passing directly through and out at the corresponding point on the right side, wounding the tongue and palate.

He presented a most pitiable sight. The mouth was wide open; the tongue protruding to its utmost extent and very much swollen; the saliva running, and all attempts to articulate or swallow impossible. It was decided that little could be done, except to make him comfortable; it was natural to believe that increased swelling would suffocate him, or that hemorrhage would set in.

On the next day we managed to introduce some fluid nourishment by means of a stomach-tube, which appeased his thirst and craving for food. This was continued, and, contrary to all hope, he began to get better; the tumefaction of the tongue gradually subsided, he breathed better, and enjoyed his food, which was still administered by tube. After twelve days he was in good enough condition to send to the rear. He was sent to hospital in Murfreesboro, where I had the pleasure of seeing him entirely recover.

Private Penzel was wounded Sept. 19th, the ball entering his mouth, while open, passed through the posterior wall of the pharynx, and out on the left side of the fifth cervical vertebra behind, without injuring teeth, tongue, or palate.

In the case of Private Van Waters, Co. G, 111th Penna. Vols., a ball entered at the superior angle of the left scapula, passing through the shoulder superficially, entering one and a half inch below the mastoid process, passing inward and upward through the superior maxilla, inside of the angle of the inferior maxilla on the left side, and out just below the inner angle of the left eye. Severe hemorrhage occurred immediately afterwards. The wound was received Oct. 28th, and he steadily went on to a cure, and one month afterwards was sent to the rear nearly well.

Private O'Connor, Co. H, 18th U. S. Infantry, wounded Sept. 20th. The ball entered just below the zygomatic arch on the left side, and passed out on the opposite side a little below the angle of the inferior maxilla. Nothing of interest occurred until Oct. 2d (twelve days), when hemorrhage set in from the wound of exit and into the mouth. This was suppressed, but recurred on the 4th, and ligation of the external carotid was performed by Surgeon Cleary, U. S. V. He gained rapidly and promised a speedy recovery until the 12th, when slight hemorrhage recurred, which ceased upon pressure being applied, and he again progressed to an almost entire healing of the wound, when, on the 23d, profuse hemorrhage set in, and he lost so much blood that I applied a ligature to the common carotid within an inch of the origin. This seemed to control the hemorrhage; the same night, however, it recurred, but was controlled by a compress. He was so

exhausted, however, by loss of blood and inability to take food that he died on the 25th.

This last case exhibits the most dangerous accident liable to occur in these wounds about the face, and warns us against giving a hasty prognosis. We are never safe until after twenty-one days or thereabouts, after which we seldom or never meet with this unhappy occurrence. Hemorrhage often takes place so unexpectedly that death occurs before surgical aid can be afforded. I had a soldier who was walking about and eating as well as ever, and though warned that there was still danger, he could hardly appreciate the fact. About three weeks subsequent to a wound near the internal carotid, he was smoking his pipe at the window after a hearty dinner, when suddenly a gush took place into the mouth, and before I could reach him, and in less than ten minutes, he was dead.

In the case of an officer of the Rifle Regiment (3d cavalry), wounded by an arrow in the abdomen, in an Indian fight, death occurred in the act of sitting on a stool, after he had been considered out of danger. The aorta had been slightly touched and the cicatrix gave way.

The relation of the above cases is interesting clinically, as giving an outline of this class of cases, showing how the most severe get well without a bad symptom, while cases which seem no longer to afford surgical interest suddenly call for prompt, energetic, and skilful interference. It is remarkable how rare secondary hemorrhage occurs. I am unable to give the exact number in our hospital, but I find the following record of

| | | | | |
|---|---|---|---|---|
| LIGATURES OF ARTERIES. | External carotid | 1 | Died | 1 |
| | Common " | 1 | " | 1 |
| | Femoral " | 7 | " | 5 |
| | Popliteal | 1 | | |
| | Intercostal (4th) | 1 | " | 1 |
| | Total, | 11 | | 8 |

Other cases occurred where no operation was performed in consequence of the seat of the wounds.

Hemorrhage used to be greatly feared, in olden times, and it has been recommended that every officer and soldier be supplied with a tourniquet, and even during the Mexican war many carried them, but the danger is entirely overestimated. I doubt if many perish on the battle-field from hemorrhage alone, and we rarely meet it afterwards until from the eighth to the twenty-fifth day. I knew it once to occur six weeks after injury.

In these accidents, if we can reach the wound, the true rule is to tie the artery above and below, if not on the proximal side near its origin, or in stumps by opening them and following up the artery to a healthy point. At best the success is not flattering. We lost eight out of eleven cases—five out of seven cases of ligation of the femoral. The French, in one hos-

pital at Constantinople, lost all their cases, seven. None of the statistics are satisfactory, and their recital would be of no value.

*Gunshot Wounds of Lungs.*—No class of cases is more interesting to the surgeon than gunshot wounds of the lungs. Involving so important a vital organ, and frequently most alarming in their character, we are yet happy in knowing that, with care and judicious treatment, about one-third or more can be saved.

Sixty-seven cases are recorded in our report, out of which, at the end of fifty-five days, when all danger was supposed to be at an end, there had been twenty-four deaths—about 37 per cent. I have written notes of eighty cases, out of whom twenty-eight died, or 35 per cent.

These cases include those of the greatest gravity, and others where it was doubtful if the lungs were materially injured, judging from the almost complete absence of alarming symptoms. The fact that the men spit blood immediately after being wounded, and for some little time after, decided us in classing them as lung cases; yet this is by no means a positive diagnostic test. Dr. Frazer states that out of nine fatal cases observed by him in the Crimea, in which the lungs were wounded, only one had hæmoptysis; and out of seven in which the lungs were found not to be wounded, two had hæmoptysis. But this statement is not in accordance with the experience of most military surgeons. Decided hemorrhage from the mouth, immediately after being wounded, is a pretty true indication. Of course, when blood and air pass through one or both orifices of the wound, there can be no doubt; but this is not usual in the majority of cases.

It has been claimed by Dr. Howard that hermetically sealing up the orifice of the wounds is the best treatment. This does not accord with my experience. Since October, 1862, I have particularly noted this class of wounds, and very near one hundred cases have been treated in the hospitals under my direction. The course pursued has been absolute rest in a comfortable position, usually semi-recumbent; a pledget of two or three thicknesses of lint, saturated with cold water, covering the wounds; sometimes a roller around the chest, sufficiently tight to control the motion of the ribs; occasional venesection, where active inflammation set in, in robust plethoric subjects; depressants to arterial action, verat. viride, digitalis, tart. antimon., and opium. Emphysema is not usual in gunshot wounds; it is more frequently observed in punctured wounds. Where internal hemorrhage occurs into the pleural cavity, the patient almost invariably dies, and I doubt the propriety of enlarging wounds or making new incisions to evacuate clots.

We subjoin brief histories of a few cases presenting alarming wounds, in which recovery took place without any bad symptoms:—

CASE I. A. J. Fillinger, 18th Ohio Battery. The ball entered four inches above the left nipple, opposite the cartilage of the 4th rib; passed through

and out two inches behind and below the posterior edge of the axilla. He spit blood when wounded, and for some days after; air passed through both openings, with copious secretion of muco-pus from mouth and wound. He entirely recovered.

CASE II. Priv. Larkin, Co. I, 2d Kentucky Cavalry. Ball entered outside right nipple; passed through and out at posterior and lower angle of scapula. He spit blood freely. Twenty-four days after being wounded the orifices were healed, and he had a copious purulent discharge from the mouth, through the bronchi, from the pleural cavity. The discharge continued for some days. He finally recovered entirely.

CASE III. J. C. Batterman, Co. G, 100th Illinois. Ball entered below the centre of the right axilla, passing backwards and out near the articulation of the 9th rib with vertebra, causing fracture. He spit blood freely, and air passed from the posterior wound for six weeks. He recovered, and went on furlough Nov. 30.

CASE IV. John Geiger, Co. K, 9th Ohio. Ball entered just below the left clavicle and first rib, passed through and out posteriorly on the right side, near the posterior edge of scapula. He remained ten days on the battle-field. Expectorated blood very freely. Sixty days after receiving the wound he went on furlough.

CASE V. Michael Murphy, Co. H, 1st Michigan. Ball entered the centre of the left clavicle, fracturing it; passed through downwards, and out about the centre of the scapula on same side. He bled freely from the mouth, and air passed out of the anterior wound. November 20 he had entirely recovered.

CASE VI. Joseph Moore, Co. G, 26th Ohio. Ball entered just below the sternal end of left clavicle, passing downwards and out below the lower angle of left scapula. Spit blood from mouth, and bloody, frothy mucus came from the anterior opening. He lay twelve days on the battle-field, in the hands of the enemy, where the only remedies were cloths dipped in cold water. On being admitted into hospital, the same treatment, with low diet and sedatives, was followed. He recovered, was removed to Murfreesboro', and furloughed Nov. 30.

CASE VII. Charles Reed, Co. H, 125th Ohio. Ball entered between the 4th and 5th ribs, in front, on the right side, and lodged. He spit blood freely, and air passed from the wound on expiration. He recovered under proper treatment. On Dec. 5 I saw him again at Murfreesboro', doing well. The ball, evidently in the lung, gave him no uneasiness.

*Gunshot Fractures of Femur.*—There were received of gunshot fractures of the femur, of

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Lower third, | 36, | of whom | 17 | died during the first two months. | | | |
| Middle | " 60 | " | 22 | " | " | " | |
| Upper | " 55 | " | 34 | " | " | " | |
| | 151 | | 73 | | | | |

The greatest number of these cases had been prisoners in the hands of the enemy for ten or twelve days, perfectly neglected, and were in a most shocking condition when admitted. Amputation should have been performed primarily in a great number of these cases. The limbs were out of shape, bones comminuted and often protruding, the wounds filled with a bloody purulent matter, and the general condition such as to render secondary operations of no value. The chances of life were too small even to propose it. All the operations performed at this period proved fatal but one. Those performed on the field, or within two days after the battle, were more successful. It would be of no value to give any more than a notice to these cases, inasmuch as very many passed from under my care at the end of two months. Although many more died, yet many were saved, and I now have five or six cases in hospital at Murfreesboro', who have so far recovered as to walk about, with firm union of the bone.

I am satisfied that our surgeons of this army will testify to many cases of good recovery, both after this campaign and that of Stone River.

The results in similar cases occurring in the English and French armies in the Crimea were most unfortunate. "Only fourteen out of one hundred and seventy-four cases of compound fracture among the men, and five out of twenty among the officers, recovered without amputation being performed." Roux mentions having seen twenty-one cases at Toulon.

What gives such wounds so terrible a mortality? It is the terrible shock to the general system, and destruction to the largest bone in the body. McLeod says: "The longitudinal splitting of the bone is so dextrously and extensively accomplished by these balls (conical), that, while but a small opening may lead to the seat of fracture, the whole shaft may be rent from end to end." And these fragments are so disturbed in their arrangement, and stripped of nutritious covering, lying across, penetrating the muscles, the ends of the upper and lower fragments of the bone drawn towards and riding past each other, that inflammation, suppuration, and degeneration of the bones and soft tissues take place rapidly, and a large sac forms, which is filled with a dark, unhealthy pus, in which the bones are soaking. Hectic sets in, of course, and no ordinary constitution can stand up against the drain. The best course to be pursued in the treatment of this class of injuries, is as soon as possible to examine with the finger the extent of the wound. If the bone is very much shattered, and the fragments disturbed from their natural position and attachments—if the shaft is split, especially into the joint—amputation affords the best chance. If the comminution is less, remove the loose pieces, or those not strongly attached, lay the limb in a straight position, with a cushion under the knee, and apply cold water. After eight or ten days, put up in a straight splint, without making too forcible extension, but endeavouring to bring the ends of the fractured bones in apposition, and retaining them. This apparatus I decidedly prefer to all others.

In certain cases, where the bone is fractured, with little comminution, and there do not appear to be loose fragments which would interfere with a cure, do not attempt any operation. Such cases will in large proportion get well. Under the most favourable circumstances, the period of treatment is long, tedious, and uncertain. Bed-sores and diarrhœa will often set in, requiring us to change position, and which interfere with reparative processes; burrowing abscesses present themselves along the thigh, and, after months of suffering and anxiety, the patient yields all hope, and is obliged to submit to amputation to save life. We have several such cases now in hospital, and I am happy to say our secondary operations have been unusually successful.

*Gunshot Injuries of Knee-Joint.*—I approach the subject of gunshot injuries of the knee-joint with much more timidity than I did a few months ago. In my report of cases which fell under my care last summer, I there stated that ten cases were admitted into hospital; that of these, three were nearly recovered, and two remained with fair chances. Time, however, seemed to diminish our hopes. Capt. Pettigrew finally submitted to amputation, and died January 7th, having suffered great pain and been reduced to a mere skeleton.

Loutenschlager died Sept. 26th, worn out by the profuse discharge; thus leaving three cases who did positively recover. Haynie passed through as a lieutenant of his regiment (10th Ohio Cavalry), a few days since (April 30th), with stiffness of the joint to some extent. He was able to ride well. Phipps is still in hospital acting as a guard, having recovered with stiffness and bent position of the joint, but which is gradually diminishing, and he is now (April 30) able to put the foot to the ground, and walks with a cane quite briskly. The other case I have lost sight of.

Sixty-five cases of this injury were brought to the hospital, of which twenty-eight died during the sixty days following. Now most of these cases were detained on the battle-field for ten or twelve days, until inflammatory and purulent disease of the joints was fully established, and the patients so worn out, that amputation was not deemed advisable except in a very few cases, which was fatal in all. A large number of these cases were so severe in the extent of injury of the ends of the bones entering into the joint, that no doubt should have existed in the minds of surgeons, as to the propriety of amputation immediately after the wound was received, but owing to the fact that our field hospitals fell into the hands of the enemy, our medical officers could not give that care which would otherwise have been afforded. Nearly all the amputations performed on the field were unsuccessful. The men died rapidly from cold, exposure and insufficient food. Those brought from the field after ten or twelve days were

transported several miles over rough roads, thus diminishing any chances of recovery.

When I left Chattanooga, there were some fifteen or twenty cases in the hospitals who promised well, but I have been unable to follow the results in their histories. Three or four cases sent to this post were seriously injured by the rough travelling in the railroad cars, yet have recovered.

While I have lost confidence in the possibility of saving gunshot wounds of the knee-joint, involving fractures of the condyles of the femur or head of the tibia, under the usual circumstances of bustle and confusion of the field, and repeated removals of wounded in ambulances to the rear, yet I still firmly believe that many cases can be saved. The cases embrace—

1. Those where the patella is fractured by shell or bullet and no injury occurs to the other bones, and where the joint is fully exposed or opened.

2. Those where the bullet passes between the patella and condyles of femur without fracture.

3. Those where the ball passes obliquely from front to rear, or the reverse, without injuring bones, but perforating the joint.

4. Those where the ball grazes the joint on either side, furrowing the bones or tearing ligaments.

If we could obtain such cases immediately after injury, place them in a hospital from which they would not be required to remove for sixty days, and provided with comforts and skilful surgical care, I am satisfied we should be rejoiced in the results.

I could relate the history of several interesting cases where the ball passed directly through the joint, and yet the cases were in a most promising condition sixty days after. Also where the patella was comminuted and large portions removed, with good prospects of recovery.

I forwarded to Washington the ball that wounded the following:—

CASE I. Private John Raudeboy, Co. D, 36th Ohio. It entered a little below the centre of right patella, while he was kneeling, passed upward and inward, through the internal condyle, tearing open the joint, and was cut out by surgeon Finley, 2d Kentucky Cavalry.

Excessive inflammation was subdued by cold applications, free healthy suppuration of the joint was established, and which had free exit. The case progressed most favourably, and, Nov. 10th, there was every prospect of final recovery; it resembled that of Lieut. Haynie very much, and I think we may class this as a recovery.

CASE II. Private Conrad Sheeler, Co. C, 18th U. S. Infantry, received gunshot wound of right knee-joint Sept. 19th, the ball entered the middle of the patella, passing through outwards and upwards, above the right external condyle, without injuring it, carrying away half the patella, and making a ragged opening into the joint. The remaining portion of the patella came away by the ulcerative process. After being treated in the hospital at Chattanooga, he was transferred to Murfreesboro' Dec. 7th. He progressed to a good cure; wound healed entirely, with an immovable joint, and prospects of a useful limb; he went on furlough March 31st.

CASE III. Corporal William Hill, 96th Illinois Vols., received a gunshot wound of left knee-joint, ball entering one inch above the upper and inner corner of the patella, passing downwards and backwards, and out at the popliteal space; the edge of the patella was perforated, but so little disturbance followed, that it was doubted if it could have passed through, yet it certainly seemed to do so. Spiculæ of bone separated, and there was a good deal of swelling about the joint, but no pus in the cavity. He was removed to Murfreesboro' Nov. 15th, and furloughed Dec. 15th.

Other cases of a similar character occurred, but I am unable to give their history to the end.

CASE IV. Private James Belford, Co. C, 89th Ohio, wounded Sept. 20th, brought to hospital in Chattanooga, and remained only three days, and then was sent to field hospital, where he remained six weeks, then to Bridgeport, where he remained four weeks, and finally to this post in January. A ball entered on the outside of the left knee, just above the external condyle, passed across and a little downwards above the edge of the patella and out on the inside of the knee, about an inch from the inner edge of the patella, opening freely into the joint.

He went through the usual course, yet, in spite of his frequent removals, did well, and his condition, May 4th, was as follows: General health good; has grown stout and ruddy. The joint is entirely healed; is stiff and solid in the straight position. There is a slight discharge from a superficial abscess external to the joint, in the popliteal space.

He is still in hospital at Murfreesboro'. His recovery will be entire.

CASE V. Private Geo. J. Shaw, Co. D, 96th Ill. Vols., was struck with the brass percussion screw of a shell, Sept. 19th, on the outer edge of the centre of the patella of the right leg, burying itself an inch in depth. He feels sure that the joint was opened, and that glairy synovia escaped for two or three days. He was taken to the field hospital at Chattanooga and remained until Nov. 25th, then removed to Bridgeport, where he remained until Dec. 7th, when he arrived at this post. The joint and whole thigh and leg were enormously swollen, the screw was extracted soon after the accident, but the joint did not take on ulcerative action.

He still remains in hospital, with a stiff, but slightly movable joint, and he will recover with a useful leg.

CASE VI. Christopher Sawer, Co. I, 88th , was wounded at Missionary Ridge, Nov. 25th. Ball entering at the upper edge of the patella of left knee, passing through external to the outer condyle, and out at the attachment of the external hamstring muscles. He was removed to Murfreesboro', Dec. 7th. The joint took a violent inflammation, and as his health became much depressed, it was thought proper to amputate it at the lower third of the thigh (operation by Surgeon Finley, 2d Ky. Cav.) Dec. 30th.

Four days after the operation hospital gangrene set in on the inner surface of the flap (circular). Bromine was freely applied, and, after the third time, the surface took on healthy action. His stump is now healed (May 4th). It is believed that if free openings had been made into the joint, and inflammation not set up by removal in the cars, we could have saved his leg.

CASE VII. John Bristow, Co. G, 19th Ohio, wounded Sept. 19th.

Ball entered on the inside of right knee-joint, just below and posterior to the inner condyle, passed forward through the soft, spongy head of the tibia, and was found under the skin on the other (outer) side of the joint opposite the head of the tibia. The ball was removed after being brought in. He remained within the rebel lines until Oct. 2d; was brought to Chattanooga, and next day sent to field hospital, thence to Bridgeport, and finally to this post December 1st. He also received a ball through the right forearm. He states that the joint was opened and synovia was discharged. I saw him for the first time on his arrival at this post. The joint was very much swollen, filled with purulent matter, but discharging freely from the openings, which were large and ragged. He went through the tedious process of the disease, but finally got well with the joint anchylosed at an angle of a little more than sixty degrees, so that as he walks the point of the toe is within ten or twelve inches of the ground. He is now (May 4) walking about the streets with crutches, with the joint somewhat tender, but otherwise entirely well. He was at one time reduced to a mere shadow, but he is now stout and hearty.

Other cases of recovery have occurred, but I have been unable to follow the histories.

*Tabular Statement of Operations performed, and their Results.*

| List of Operations. | | Side of body. | | Period of operation. | | | | Died. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Right. | Left. | Primary. | Secondary. | Before admission into hospital. | Total. | After primary operation. | After secondary operation. |
| Amputations. | Fingers | 2 | 5 | 3 | 4 | ... | 7 | ... | ... |
| | Forearm | 1 | ... | 1 | ... | 1 | 2 | ... | ... |
| | Arm | 6 | 7 | 7 | 6 | 11 | 24 | [1]4 | 6 |
| | Shoulder | ... | ... | ... | ... | 3 | 3 | 1 | ... |
| | Toes | ... | ... | ... | ... | 2 | 5 | 1 | ... |
| | Tarso-metatarsal | ... | ... | ... | ... | 2 | 2 | ... | ... |
| | Leg | 4 | 5 | 6 | ... | 24 | 33 | [2]3 | 1 |
| | Thigh — lower third | 4 | 4 | ... | 5 | 3 | 11 | [3]1 | 1 |
| | Thigh — middle third | 5 | 4 | 4 | 4 | 4 | 13 | 5 | 6 |
| | Thigh — upper third | ... | 1 | 1 | ... | 3 | 4 | 3 | ... |
| | Other amputations | ... | 1 | 1 | ... | ... | 1 | ... | ... |
| Excisions. | Elbow | 2 | 1 | 2 | 1 | ... | 3 | ... | 1 |
| | Shoulder | ... | ... | ... | ... | 1 | 1 | ... | 1 |
| | Jaw (lower) partial | ... | 1 | 1 | ... | ... | 1 | ... | ... |
| | Continuity of long bones | 11 | 7 | 9 | 4 | 3 | 21 | 2 | 2 |
| | Extraction of balls | 3 | 3 | ... | ... | ... | 6 | ... | ... |
| Ligature of Arteries. | Of ext. carotid | 1 | ... | ... | 1 | ... | 1 | ... | 1 |
| | com. carotid | 1 | ... | ... | 1 | ... | 1 | ... | 1 |
| | femoral | 4 | 3 | ... | 7 | ... | 7 | ... | 5 |
| | popliteal | ... | 1 | ... | 1 | ... | 1 | ... | 1 |
| | 4th intercostal | 1 | ... | ... | 1 | ... | 1 | ... | [4]1 |
| | Total | 45 | 43 | 35 | 35 | 57 | 145 | 20 | 27 |

[1] 1 tetanus; 1 pyæmia.
[2] 1 secondary hemorrhage.
[3] Secondary hemorrhage.
[4] Twenty-four days after ligation of empyema.

The above statement does not include very many operations performed during the first four days in the several hospitals, but principally those found when the record was taken and those performed afterwards.

Thus a very large number of operations about the fingers, hands, and forearm were performed and the patient immediately sent across the bridge to the south side of the river. It was absolutely necessary to get rid of every man who could use his legs. Hundreds of bullets were extracted of which no record was kept. Many cases of amputation of the arm, leg, and thighs were hurried off in ambulances. The fear of the wounded lest they might fall into the hands of the enemy, in case of the army being obliged to retreat, or of the town being shelled, gave wings to the heels of many who otherwise would have scarcely been able to move. All those who are not accounted for in the above table were either removed to the rear or still remained in hospital at the end of October.

Of the operations which were interesting to me exsections were by far the most so; thus, we had eighteen in continuity of the long bones, three of the elbow-joint, one of the shoulder (performed before admission), and what is recorded as a partial exsection of the lower jaw.

Of those of the long bones, three were of the shaft of the femur, performed by myself, all of which were fatal; three of the tibia, performed by myself, all of which were perfectly successful; eight of the arm, three performed by myself, one by Surgeon Irish, 77th Penna., one by Surgeon Wolf, 29th Penna., one by Surgeon McMahon, 64th Ohio—of the others I regret I cannot give the operators.[1] Of the total twenty-one cases four turned out fatally, a very small percentage. Of the three excisions of the elbow-joint, two were performed by myself, and one by Surgeon Cleary, U. S. V. Only one was fatal; the other two did well.

Detailed histories would not give any new ideas, and I do not think it of importance, as these operations are now performed by all surgeons, and, when they can be substituted, preferred to amputations. When time and leisure from active service shall permit, I hope to give some further remarks on operations and special gunshot wounds which may be of interest. I have had the good fortune to be placed in positions where nearly four thousand wounded have been directly under my professional care, and afforded a fine opportunity for study and obtaining practical experience.

I have endeavoured to perform as few operations as possible, and trust largely to natural processes of reparation. While I have lost a few cases that would have been saved by early amputation, I have the satisfaction of knowing that I have preserved many a limb which is or will be of good use to its owner.

[1] The other four were of the radius and ulna.

ART. IV.—*On Malingering, especially in regard to Simulation of Diseases of the Nervous System.* By WM. W. KEEN, M. D., S. WEIR MITCHELL, M. D., and GEO. R. MOREHOUSE, M. D., Acting Assistant Surgeons U. S. A. In charge of the U. S. A. Wards for Injuries and Diseases of the Nervous System, Turner's Lane Hospital, Phila.

IN the old regular army, malingering was better understood by the men, and relatively, perhaps, more often practised than it is in our present army, although we suspect that this is less and less true in each succeeding year of drafts and of warfare. The older soldiers are fast learning deceit, and, if we be not mistaken, the attempts to malinger are now much more frequent, and far more clever, than they were two years ago. As yet, however, such cases as mentioned by Mr. Guthrie, of a soldier's swallowing a cork full of pins to produce hæmoptysis, of which he died, the carotid having been wounded; or, as has been often seen in the British service, of artificial ophthalmia, produced by the use of corrosive sublimate to such an extent that the leeches afterwards used were poisoned, and died, or, as the matchless ingenuity of the French conscripts has devised, of imitating polypus of the nose, by introducing the testes of cocks and the kidneys of hares, would be unlikely to occur in our service. Indeed, our soldiers rarely produce diseases or aggravate them; but one case of purposely irritated ulcer has been seen by us, and but very few more have come to our knowledge. The great majority of malingerers consists rather of men who exaggerate real maladies of trifling character, or who feign disease outright. Of the two classes, the first is the larger. The real depletion of our ranks is not so much by feigned epilepsies, paralyses, and the like—we speak now of our own experience—as by these cases of disease, once severe, or always slight, to which men add invented symptoms, or continue to assert the existence of those which have passed away. The stimulus of large bounties has increased the number of these deceivers. Many have concealed symptoms to enter the service, and, when enlisted, have exposed them anew, with every exaggeration of statement, in order that they might be discharged, so as again to re-enter with a second bounty. Others, among substitutes especially, have been content if they could hoodwink the doctors far enough to secure for themselves the ease of hospital wards, and security from picket duty, and the bivouac.

Certain questions of an ethical nature present themselves in many cases of malingering. Thus, for instance, let us suppose the case of a man, as to whom all our means of information have been used. We still feel pretty confident that he is malingering; we cannot in any way become sure. He has no obvious disease. What is the surgeon's duty here? We, ourselves, return such cases to duty, giving the government, rather than the man

himself, the benefit of the doubt. If he be really a well man, no harm is thus done. If he be suffering from diseases which we have failed to detect, he is pretty sure to find his way into a hospital again.

It may be objected that great injury may thus be done the unfortunate victims. But, in the first place, these cases are almost invariably chronic, and, therefore, even if genuine, could scarcely be irreparably injured by a simple journey, and an attempt at duty. And, in the second, as Hennen observes, "it is rarely that diseases of this description exist any length of time without obviously injuring the patient's general health, or his external appearance." Hence, in such dubious cases, the amount of disease actually existing must be ordinarily very minute, or the question could scarcely arise, "Is there any disease?" These remarks are based, however, on the supposition that the surgeon has faithfully used all the means of diagnosis at his command: that his physical exploration has been a careful one; that his inspection and examination have not been limited to the face, coat, pants, and pulse, but have been minute and bodily, especially so of the region implicated; that the history and symptoms have been accurately noted; that chemistry and the microscope have divulged nothing wrong in the urine, &c.; that the special tests by ether, by galvanism, by the ophthalmoscope, the ear speculum, &c., have all been employed in vain; above all, that the doctor's eyes, ears, and brains have been active and observant. In the *Cyclop. of Prac. Med.*, ii. 150, are given two sad cases as cautions. In one the patient complained of pain only, and finally died. His discharge was for many years refused him by Foderé, on the ground of the unreality of his disease; in the other, an English naval surgeon compelled a suspected malingerer, even by flogging, to lift and swing an eighteen pound weight with his arm, despite the most earnest entreaties and asseverations of agonizing pain in the shoulder, from which, soon after, he evacuated two pounds of purulent matter. Had the authors of this cruelty carefully adhered to our rules, it seems impossible that they could have been so grossly mistaken, for it is incredible that life should be lost, or a part so deeply involved, without constitutional or local troubles of such a nature that *some* disease, if not the *exact* disease, must have been recognized as existing. The authors who quote these cases mention the latter, at least, as an instance "in which ignorance was as conspicuous as barbarity."

But what is to be done with cases of undoubted and obstinate malingerers; with men whose endurance and tenacity of purpose would be heroic, were the object in view a righteous one? Experienced army surgeons tell us that it is better, on the whole, to discharge such men, and under the old army rule this would, no doubt, be the best plan, for such men are, as a rule, useless as soldiers, and a dishonourable discharge brands the criminal with shame and saves the government from expense. But, under present circumstances, the man would merely change his residence, and re-enlist

with a new bounty, to repeat again the same easy means of creating an income. If, on the other hand, we return such men to duty ruthlessly, they only escape from one surgeon to find another more easy and more credulous, while in most cases they get a ready discharge at the convalescent camps, and return home to repeat the same thieving and lying process.

To court-martial these men is difficult, since in many a case in which it is morally certain that the man is a malingerer, it is yet impossible to swear to it, and even when it can be sworn to, it is often difficult to advance such evidence as will convince a court of non-professional men. When it is possible to do so, charges should by all means be preferred, and proper punishment secured; but, unfortunately, this measure is usually avoided, even in the most palpable cases, whether from listlessness or ignorance, it is impossible to say. But in cases which from any cause cannot be brought to trial, two courses lie open to us. First, to return the malingerer to duty, with a note upon his descriptive list stating the fact of his malingering. This is fully justified both by the ordinary practice of commanding officers, and by private but official authorization to ourselves. Such a note would always follow up a malingerer, and almost inevitably prevent the attainment of his darling object, by branding him to every officer under whose control he comes. It has succeeded admirably in the cases in which of late we have adopted it. Second, to retain him in the hospital or regiment, and compel him constantly to do the hardest and filthiest duty on police. If it could be authorized in a hospital or military district, to form a "malingerer's brigade," with a peculiar dress, doing just such work as we have mentioned, until they were willing to return to duty as honest men, the disgrace and hard work incident to such a position, it is believed, would be of the greatest advantage, and would rid the service of much of the malingering now existing. Men malinger in order to avoid work and obtain a discharge, and so long as one man succeeds in doing either, so long will ten others continue to imitate him. But if, thereby, they should only subject themselves to harder work than ever, add dishonour to hard labour, and lose all hope of a discharge, malingerers would be rarely seen. But surgeons should be careful about entering such remark on a descriptive list, or in entailing disgrace upon men by accusing them of feigning, and punishing them for it. Every means should be adopted to ascertain *positively* the reality of the deception. It is unfortunately the fact, that one rogue throws a shadow of suspicion on a dozen honest men. Our dexterity in detecting deception must not become so acute that in every "back case" we shall see a malingerer. We remember one man under our own care, with whom we adopted the severest measures, even to the actual cautery, in the belief of his malingering, and who, in undergoing a subsequent physical examination for a promotion, where he would appear to the best advantage, failed to pass on account of the very defect which we had believed simulated. Such cases have made us wary, and we name them as

warnings to others, lest in endeavouring to do justice to the government, we be led unwittingly, to do injustice to the men.

Malingering is more especially rife in general hospitals, and it is easy to see why. Men are there separated from the medical officers who knew all about them when they entered the service, who have been with them during all their campaigns, and are familiar with their general every-day character. Their company commanders are, to a great extent, inaccessible, and many an apocryphal fall or fever, and many an imaginary shell or shot wound, which inflicts the saddest injuries on the hapless sufferers, or perils their health and their lives, would vanish could they be confronted with their captains.

Here, too, it is proper to notice a class of men who escape duty by stating that their disability existed before they entered the service. They often very coolly allege that the surgeon was not sharp enough to catch them, and so they got the bounty and the government a bad soldier. Usually a losing bargain for the government. Even if, in such cases, the disease really existed, unless the disability be complete, they should unflinchingly be made to do duty either in hospital, the Veteran Reserve Corps, or else in the field. They voluntarily enlisted, and as the government has performed its part of the agreement in giving them bounty, clothing, pay, and rations, let them be made to perform their part, to do duty despite the disease. While writing this, we have had in our wards one man with epilepsy, and another with frontal neuralgia and severe headache. The epileptic attacks only occurred monthly. Both of them asserted that their diseases existed long before enlistment, and that they knew it. Without inquiring into the reality of the disease, we immediately returned them to duty, with a note on the descriptive list, stating the facts *as they* gave them, conceiving it to have been their agreement to do duty, disease and all. Besides the special tests in particular diseases hereafter mentioned, there are general modes of discovering malingerers, which are of the greatest value, and which, although they are not new, we have yet reason to fear are not often carried out in practice.

One of the most important of these is the establishment of a system of espionage for men who are lame, paralyzed, choreic, &c., by which they may be observed inside and especially outside of the hospital inclosure when they least suspect it, to see how they act when off their guard, to hear what they say when they are drunk, and to report to the surgeon, who cannot himself study them under these circumstances. This requires the best and most reliable men one can command, and it must be entered upon "con amore." Not to awaken suspicion, the detective should be on some nominal duty, be allowed a pass at all hours, know when the men have passes, and zealously follow them everywhere unseen. Nor is this a degrading duty, as some would imagine. It is due to justice that the scoundrels should be detected, and it is no less due to an honest man who

has unluckily fallen under suspicion, that he should be himself vindicated by the negative proof and by persistent and careful scrutiny.

Besides this, it is important to study the character of a suspected malingerer, as the general deportment of the man in reference to other subjects than his disease may give an approximate estimate of the truth or falsity of his statements. "Falsus in uno, falsus in omnibus," is no less good in the medical jury box than in the legal, and the tacit cross-questioning of observation may educe circumstantial evidence sometimes quite sufficient to warrant a verdict of "guilty," and a sentence of "field duty."

It must not be forgotten that some men carry on the double game of a pretended disease, and an assumed character. Such men are doubly secured if they be adepts, but doubly exposed if novices. Every means that the science or the ingenuity of the surgeon can command is needed, and should be employed, and even then it is sometimes only by a happy chance that they are discovered.

The severer remedies, both medicinal and mental, in most cases, so far as we know, have been too much laid aside. Oftentimes they will avail nothing; tact, rather than force, will win the day, and many a man will suffer dry galvanism, the actual cautery, setons and blisters, and yet persist in his deception, whom a simple artifice will trip. But there are other men of different mould who cannot endure bodily pains, and who will yield to heroic remedies when all others have failed.

Anæsthetics, again, are of the utmost value, and often may be summoned as a reserve to decide the fortunes of a doubtful day. Ether has been often used by surgeons to detect malingering, but we are not aware that it has been very widely used, except in cases of aphonia and pretended dumbness, stricture, enlarged belly, and anchylosis of joints, and contractions of muscles. In all these maladies we have either used it ourselves, or have known of its use by others. But its usefulness should not stop here. It is equally valuable in cases of deafness, blindness, rheumatism, paralysis, and epilepsy, as we shall show in considering each of these diseases separately.

But above all, says Bartholow, the surgeon will find it necessary to use his own senses, his habits of observation, and that peculiar tact in detecting impostors, which, whilst it seems an instinct with some, may be acquired by all who are willing to cultivate it. This tact is shown in a thousand ways. It seems often almost intuitive, and fixes instantly upon a malingerer for no other than "a woman's reason." It devises unusual means for unusual cases, and adapts old means anew. No better school exists for its development than a general military hospital. Many men may, by this tact, be made to pledge themselves to contradictory symptoms. We have seen a man led to state when his right face was paralyzed, that the mouth was drawn very strongly *towards* the right side. Some, by having their attention diverted by synchronous movement of other parts, will forget their old complaints, and betray themselves, as we have seen done by a man whose

left deltoid was "paralyzed," and who held the arm out at full length for one decisive moment, when our supporting hand was suddenly but furtively removed, at the time he was rising to his feet.

*Anchylosis.*—We have seen but one case in which this was feigned; ether in five minutes discovered the cheat. Genuine anchylosis can be only either, 1, bony or true anchylosis; 2, false anchylosis by deformity of bones, either congenital or acquired by fracture, &c.; 3, false anchylosis, by bands of lymph; 4, false anchylosis by contractions of muscles. The first never could be feigned, from its perfect immobility. In the second and third, the sudden arrest of motion on arriving at its limits, is very marked, and the giving away of the bands of lymph as the motion progressed further, would be in the third, diagnostic. It is only the fourth that could be well feigned, and especially by a soldier who had really received a wound of the neighbouring muscles or nerves. In these cases, as Dr. Bartholow observes, in some excellent remarks on the subject (*Manual of Instruction for Enlisted and Discharged Soldiers*, pp. 143–4), the endurance of the malingerer is most extraordinary * * * in maintaining a most uncomfortable position of a limb for many months. He might, indeed, have said "years," for many such cases are reported. In one instance (*Cyclop. of Prac. Med.*, ii. p. 138), a conscript kept his right knee bent so as never to touch his foot to the ground for seven years. He escaped detection all this time, and was only employed on light duty; but when discharged observed, "I will try to put down my leg, it may be of use to me now," and walked off with a firm step, leaving his cane as a legacy to his doctor. Need we, in view of such cases, be surprised at the malingering for only *months* in our army.

In the cases of true contraction, the arrest of motion at the instant of putting the muscles on the stretch, and the absence of voluntary resistance, are marked symptoms which a malingerer cannot feign, and in case there be any doubt, etherization will instantly solve the question. We need not resort to all the varied and clumsy means of diagnosis heretofore employed, as mentioned at length by Beck (*Med. Jurisp.*, i. 77). Etherize the man, and in five minutes detection is a certainty, if he be a malingerer. As an example of a typical case of feigned anchylosis, well treated and well related, we refer the reader to the case reported by Dewitt C. Peters, Assistant Surgeon U. S. A., in the *American Med. Times* for March 5, 1864. Another which well illustrates both the perseverance of the malingerer and the complete deception of the surgeon (no less a person than Sir Geo. Ballingall himself), and the excellence and the value of anæsthetics is related in *Ballingall's Military Surgery*, p. 614. Excision of the elbow was about to be performed for anchylosed elbow, which was discovered to be perfectly flexible when the man was chloroformed. It is also to be borne in mind, that a man may cause false anchylosis by long continued voluntary disuse of a part. Such a man is no less a malingerer, but he declares his own sentence, and nature carries it out fearfully and justly.

*Blindness.*—This has been often, we doubt not, feigned, especially in those cases in which slight but real, and sometimes visible defects existed, which would often deceive surgeons inexperienced in diseases of the eye, and occasionally

masters in the art who had not the requisite instruments for more minute inspection.

It has not occurred to us to have any such cases under our care since an eye and ear ward has been established at the Satterlee Hospital, West Philadelphia, under the able care of Acting Assistant Surgeon E. Dyer. We have, however, one means of detection to suggest, which, so far as we are aware, has not been used, but which could readily be employed even in the field, and might prove of the greatest value. Let the sound eye be covered by adhesive plaster, and the man *etherized*, and when recovering from the anæsthesia, when he is unaware, as yet, of his condition, let his sight be tested by the simplest measures, such as offering him some water (some whiskey is better), or your hand, for the affection developed by ether may often be turned to advantage.

We desire also to add one case, kindly furnished us by Dr. Dyer, which is comparatively novel. Its test possesses the great advantage of mathematical certainty. It is a well known fact in optics that a prism, by refraction, presents the object observed at an elevation different from the true one.

One of Dr. Dyer's patients complained of entire blindness in the right eye. An examination by the eye and the ophthalmoscope revealed no lesion, and he was then tested as follows: A prism being held before the right eye, the left eye being open, a pen was held up and the patient asked how many he saw. "Two." What is their relative position? "One is higher than the other." Sadly accurate. His perfect vision was proved, since he saw the pen with the left eye at the real elevation, and with the right eye at an imaginary one. The experiment was repeated with another prism of a different angle, and the result verified, the distance between the two pens only being altered. The prism being removed, the man saw that but one pen had been held up, and very obligingly played cards all the afternoon with his left eye entirely closed by a bandage. The army of the Potomac speedily received a reinforcement of one.

*Lameness* is a frequently feigned disease, but is very various in its alleged cause. It is often ascribed to rheumatism, to anchylosis, to weak back, to paralysis, to œdema or varicose veins of the leg, to weakness of some point or of the entire limb. Of these we shall only notice here the last three, the others being considered under different heads. The most difficult cases of all are those arising from an asserted weak ankle, or weak knee. Almost every one has himself felt, after a sprain, a certain amount of weakness, which would have incapacitated him from marching, or even lamed him considerably, and which yet could not be detected by the most expert physician. When, therefore, we are puzzled by such a case, as we often are, and can discover no lesion after the most careful examination, we should seek collateral evidence, such as the man's character, his willingness to work, the general tenor of his story of the origin of his malady, his conduct and gait away from the hospital, and when drunk, if it so be that he indulges thus. A detective should instantly be put on his track, and his every movement watched. He should also be etherized and skilfully baited to walk about and display his powers while thus intoxicated. Even then, after the most patient observation, we are often in doubt, and in such cases we usually act as we would in all puzzling cases of supposed pain. We thus do less injustice, we are sure, than by retaining such men for months, for, it must be remembered that while, by returning them to duty, we may wrong, say one man in ten, who is a real case, yet, if we follow the opposite course, we wrong the government in *nine* cases. Besides this, we set a premium on malingering, for

however well a man may keep his secret while it is in progress, when his course is run in the hospital or in the service, he recounts his victories over the doctor as well as those over the enemy. We remember one case occurring in Washington, in which the man in whom the utmost care could discover, during some weeks, no source of lameness, was ordered to duty. He begged first for two crutches, then for one, then for a cane, meanwhile barely supporting himself against the wall, but finding that nothing would be given him, he at last, with the most irresistible jollity, slung his knapsack, and jauntily stepped along the road amid the shouts of the men, that "old Chickahominy," as they called him, had been caught and cured.

We are reminded by a friend (Dr. Da Costa) that he has often detected feigned lameness by observing whether the cane is put down before the lame foot or with it, or after it. A really lame man wants the *support* of a cane, and of course never will use the leg first and the cane *last*. He will always make the cane precede or accompany the foot. Where the lameness arises from varicose veins, their severity must be the test, not always when on the border line, an easy matter to decide. In cases of œdema the cause of this condition must be carefully sought. We only know by report, of its having been caused by ligatures, for we have seen no such cases. One cause, illustrated in the subjoined case, we find has been also noted by Bartholow (*op. cit.*, pp. 145–7), who says that he had at one time ten men in hospital with lameness from œdema, in whom the only probable cause was compression of the popliteal vein by crossing the legs. This we would propose to cure by keeping the popliteal space *sore*, either by blisters, croton oil, &c. Or, perhaps, what would be better, lest the means of cure be alleged as an aggravation of the disease, to blister the well knee and thigh anteriorly. The following case we detail at length as a remarkable illustration of feigned lameness, mental debility, deafness, and spermatorrhœa, kept up with the utmost persistency for months, but finally and fully detected.

CASE.—*Feigned Deafness; Spermatorrhœa; Lameness.*—W. C., private Co. I, 61st N. Y., æt. 35, about the time of the first battle of Fredericksburg, Dec. 13, 1862, states that he was sick with pain in the bones, headache, general debility, &c., when, after some treatment, he was furloughed. In May he was sent to Armory Square Hospital, Washington, and has been in hospital ever since. He was admitted to Christian St. Hospital June 30th, 1863. He then complained of almost total deafness, the cause of which was unassignable, severe spermatorrhœa, general loss of "mental power," and lameness and swelling of the right leg, with severe pain in the back, such that he was unable to get out of bed. We minutely examined into the history of the trouble in the leg, at the same time gradually lowering the voice with each succeeding question. He was intently interested in impressing us with the horrible state of his limb, and did not notice the stratagem until we were speaking so low that the surgeons about us had ceased to hear our words distinctly. His "mental power," of which he said so much, was unequal to this trial. We learned, also, that when admitted his hearing was perfectly good.

We next examined the validity of his spermatorrhœa. Having had clean sheets, shirts, and drawers furnished him, with care, on the ordinary day for such a change, and, therefore, without awakening his suspicions, we questioned him the following morning as to the spermatorrhœa, and he alleged several emissions the preceding night. Unfortunately for his veracity, we turned down the clothes, and the sheets, shirt and drawers exhibited no trace of such a misfortune. Subsequently he exhibited to us, with some triumph, indubitable evidences, such as we had sought, but the ready explanation of a manufactured article was too obvious for even his "mental power" to withstand.

We were now thoroughly convinced that all his pretensions were false, but

the difficulty was to overcome his obstinate *inertia*. With unyielding pertinacity he clung to his last hope. His leg was now, by a curious contradiction, his only support. Driven from every other refuge, he posted himself resolutely in this, and disputed every inch. Were crutches and canes taken away, he simply interposed the stumbling-block of absolute rest, and threatened to conquer by "masterly inactivity." Grant him the aids to locomotion, and for weeks he hobbled around on two crutches, with his leg slung in a broad and showy saddle-girth, bemoaning his enfeebled power of ratiocination, and requesting, now and then, in a tone of quiet assumption, some new privilege, such as a reporting pass, or to be allowed to go and come without any pass whatever, on the ground that he had formerly been an officer, &c. Indeed, he assumed a manner far above those whom he called "the men," rarely associated with them, claimed the privileges due him as a former medical student, talked metaphysics, chess, and politics, and had so dainty a stomach that he was constantly requesting at least the small favour of an early pass, to get some breakfast, as he had been unable to eat the plebeian and coarse hospital ration.

We soon found, by close observation of his leg, that there was never a ligature around the thigh, as we had at first suspected, but that he kept up the œdema by constantly sitting with his leg resting on his crutch, which was placed under the popliteal space. Soon after, he completed his race. One bright, moonlight night, the steward heard an unusual noise just after midnight, on his roof, and, on going to the window, he saw our lame man drop from the eaves, outside the hospital, and make a nimble escape without crutches, after having climbed over a fourteen feet pavilion. Undoubtedly he got in the same way, for the next morning he was in the ward, and stoutly persisted that he had not been out. Convinced by the concurrent testimony of two witnesses, and the condition of his clothing, we ordered that if he did not walk out to his meals, he should neither eat nor drink. For three entire days not a mouthful passed his lips, and even then, with a resolution that would have won him fame in any honourable course, he only went in the most helpless manner that could well be imagined. After two days, we sent him to the hospital then designated for malingerers, where he so successfully imposed upon a new surgeon in charge, that, against the remonstrances of the ward surgeon, and the antecedents of the man which we had carefully furnished, he was allowed the most unlimited privileges, until a peremptory order from the medical director sent him to "duty." How far he got may be imagined from the fact that our last intercourse with the scoundrel, three months afterwards, was to order him out of our hospital, which he visited as an able-bodied citizen, in a glossy black suit.

*Deafness.*—We have had a few cases of deafness under our care, of which but one, so far as we know, has been feigned. This case has been stated at length under the head of lameness.

Most of the cases of deafness, unless otherwise more gravely complicated, have been treated by Dr. Dyer. If feigned, they are usually detected by various ready expedients, such as in one of Dr. Dyer's cases, in which, after blindfolding the patient, he held a watch out and asked the man, in a low voice, if he could hear it. "No," was the answer, its categorical form dispelling any doubt that he was answering the *act* rather than the question. Or, as in our own case, when the man's leg was implicated as well as his ear, and while engaging his attention wholly in regard to the former, the voice was so lowered that one of us sitting nearer the interrogator, could scarcely hear, while the patient answered readily every question. The manner and voice of a deaf man are peculiar, and can hardly be simulated well. Bartholow (*op. cit.*, p. 108) characterizes his voice as "low toned," but our own observation leads us with Gavin (*Feigned and Fictitious Diseases*, p. 49) to call it rough and loud, for the very good reason that the man is unaware how loudly he does speak; this is only true, however, in case of marked deafness. He is more happy in his quotation from the *Cyclop.*

*of Prac. Med.*, ii. p. 139, of "the natural but involuntary language of the countenance" as evidence of imposture. Ordronaux also describes aptly (*op. cit.*, p. 71), the interrogative attention of the really deaf as so different from the dull and stupid air assumed by the simulator, and calls attention to the evident fact, that perceiving the fall of a heavy body on the floor may be deceptive as to supposed simulation, since it may make itself known by the shock of its fall. Even very deaf persons, too, can often hear a steam whistle, a drum, or a bell.

In deafness, too, we have to suggest the employment of ether, apparently the best test in malingering in its protean forms.[1] If in the stage of semi-consciousness, when the man forgets his surroundings, and their necessities, he can hear, there can be no doubt as to the case. We should regard the test as conclusive. Of course, suspicion of malingering can only be entertained in case no real disease can be detected on the most careful and thorough examination of the ear by a speculum.

*Diarrhœa and Dysentery.*—These diseases are not very frequently feigned, so far as we can learn, probably because of their inconvenience. We have seen but two instances. We have mentioned them for the purpose of pointing out the only sure and ready means in case of suspicion. Place the patient under guard, and let each stool be separately observed by the surgeon, if possible, or by the steward, ward master, or other person. This method can never fail us, unless the man has real diarrhœa produced artificially, when the cause must be looked for and removed.

*Of Voluntary Vomiting.*—We have seen one case at Christian St. Hospital, and Dr. Bartholow has observed two instances. These cases are, we believe, unusual, and, owing to this very fact, are apt to escape, their true nature being scarcely suspected. In all such, the proper treatment is that which was adopted in the three already mentioned. If no loss of flesh nor constitutional disturbance result from the loss of food, nor any disease of the stomach sufficient to cause the phenomena, be noticed, let them be returned to duty, with the proper note on their descriptive list.

*Spermatorrhœa.*—Although scarcely any notice is taken of this disease in the books, we believe it to be far more frequently feigned than many others of greater prominence. It has been our fortune to meet with four cases of alleged spermatorrhœa, three of which were feigned. They gave reasonable accounts of themselves, deriving their information either from previous experience, or from some of the wretched publications of the day. We readily detected them by having their bed linen and shirts changed at the usual time, and inspecting them for a couple of weeks without the patient's knowledge. Notwithstanding their asseverations of repeated attacks, not a spot could be found. Sometimes, on the assertion of the first discharge, an immediate inspection of the bed-clothes and shirt has proved the falsehood of the man, much to his chagrin. Subsequent evidence in this direction is valueless, for very obvious reasons.

*Pain* is not a feigned disease, but is the most easily feigned symptom, the most difficult and often most apparently cruel to gainsay or deny, and, at the

[1] Recently, in our wards, ready detection was thus obtained in a case of well simulated deafness.

same time, the most available stronghold to which the malingerer can resort. "If a man positively affirms that he suffers great pain in some portion of the body, it seems to the popular mind absurd for a surgeon to affirm that he does not, and this idea has been acted upon till forbearance is exhausted." (*Woodward's Camp Diseases*, p. 326). That Dr. Woodward's criticism is essentially just, is the only reason we can offer for introducing the subject here, and not because we have anything new to suggest. The only general rule to be observed is, that *where no other evidence than the man's assertion of pain exist, he should be sent to his regiment.* But it must be understood that "no other evidence" is to be accurately determined, and that the rule has exceptions.

We have in our wards three cases of wounds of nerves, in which the only effect left is the neuralgic pain, but we keep them, and treat them, because we regard the seat of wound, the original lesion of motion and sensation, the frequency of just such neuralgic pain, and the men's good general character to be sufficient "other evidence." Yet in two cases of what we knew to be the most agonizing pain, with greater evidence than these, we have known a good surgeon to pronounce the men "humbugs," or, at the least, "exaggerators." No symptom calls for such thorough, patient, and discriminative examination, and such thoughtful, conscientious decision. While Foderé's case serves as a warning from blind severity on the one side, let the many flagrant deceptions successfully practised on surgeons keep us from too weak indulgence on the other.

Often the unexpected employment of a little artifice will suffice. We had one man who complained of constant pain in the hand, from a wound in the median nerve. The wound of the nerve was, at best, very doubtful, and his exaggerated shrinking, even when pointed at by the finger, led us to suspect him strongly. Pressure was excessively painful, and he would scarcely allow his hand to be even looked at. Yet one day, on the plea of seeing how well he could use his hand, while examining minutely the movements of each phalanx of each finger, without his knowledge, we pressed heavily on every part of the hand, and he did not even wince.

No men are so apt to exaggerate and overact their part, nor any so apt to endeavour to insure belief by backing their assertions by repetition and affirmation, as those who feign simple pain. Such means are necessary to bolster doubtful assertions only.

*Insanity.*—Long treatises of the greatest value have been written upon the subject. But in our army they are rendered absolutely worthless, save in reference to drafted men, and in the Government Insane Asylum, since it is forbidden to discharge insane men. And any one who would feign insanity and submit to its restraints and associations to avoid work and obtain ease, must be in reality a monomaniac. The number of cases of insanity in our army is astonishing. The assistant surgeon at the insane asylum informed us that the average admissions there from the army alone were rather over one every day.

"*Back Cases*," as we familiarly termed them, are those in which the patients complain of "lame back," "weak back," "pain in the back," "kidney complaint," "rheumatism," &c. They occur by dozens in every great hospital. They are in most cases, we believe, real, but from this very fact are also fre-

quently feigned; the more successfully from the obscurity of the symptoms and pathology of the disease, for we believe, with Dr. Cheyne, that the most exact and scientific knowledge is at once the most ready means of detection. It is not strange that in a large army, exposed constantly to the vicissitudes of a soldier's life, marching in rain and sunshine, sleeping without protection, building entrenchments with the spade and the axe, and exposed to all the accidents of the battle-field, an immense number of men should suffer from spinal meningitis, chronic or acute rheumatism, sprains from falls, blows, or carrying heavy loads, congestion and inflammation of the kidney, &c. Many of these cases improve under the appropriate treatment, as indicated by their history and symptoms, and some get worse and worse. But then, a reserve of many more remain as they were, and it is here that the malingerers are found, for they will never get any worse, be it noted, than is necessary for them to succeed. We can give no better description of them than that of Assistant Surgeon Woodward (*Camp Diseases of the Army*, pp. 324–5).

"These patients complain loudly of pain. They stoop in their gait and limp about by aid of sticks, but they appear well nourished, devour their full ration of food, and present none of the grave constitutional symptoms of the cachectic neuralgias we have considered. Nor are any of the symptoms of chronic rheumatism present. There is no deformity, swelling, stiffness, or immobility of the joints. These patients are more apt to attribute their malady to a strain than the genuine cases, and tell frequently a pitiful story. The experienced surgeon will very often detect them by this story alone; they whimper and even sob in an unmanly manner, which in itself alone should produce suspicion."

Here, then, the most careful scrutiny must be exercised. Every means of diagnosis must be employed. The history and symptoms must be obtained in detail, the body strictly examined, the urine analyzed, the constitutional condition studied, and the progress of the case carefully noted.

We well recall the case of a man now in our wards, who was transferred with a note on his medical descriptive list, stating that he was believed to be a malingerer. His urine was loaded with the oxalates, and his febrile and weak condition in a moment assured us that he was a real sufferer. His subsequent history medically, and the most tender, careful, and reliable nurse we ever had, fully confirmed our opinion. Yet we remember equally well another man, who deceived one of us completely, by his connected story and consistent symptoms, until his captain accused him, on the descriptive list, of cowardice, when he immediately deserted, by climbing over a fourteen feet fence, to avoid facing the charge in his company, whither he was to be sent.

These cases have enjoyed the unenviable and single notoriety of having been prohibited from being discharged, by order of the War Department, and with the best of reason. All authors are agreed that where the surgeon can discover no lesion after careful search, he may conclude that "in nineteen cases out of twenty * * no material disease exists" (Marshall), and of course fearlessly return the man to duty.

Often such cases *may be detected* by their mode of using a cane, as noted under lameness, by their discrepant and exaggerated histories, by the reputation they bear with their regiments, as ascertained from the descriptive lists, or from other men of their regiment, by their general character, the alleged want of effect of narcotics, and by espionage, both in and out of the ward. This last, in such cases, we regard as the most valuable means, and unfortunately the most

neglected. In one case, at the Fort Schuyler General Hospital, a man "who had gone for many months in a semi-erect attitude, suddenly straightened himself and threw up his arms to pull down the cape of his great coat, which a gust of wind wrapped about his head." Another, a lame man, who ran to catch a steamboat on the point of leaving, and the subjoined case, all illustrate its use. Our own case also shows the pertinacity and endurance of the man, and that the severe remedies which often relieve rheumatism, are not always calculated to make the malingerer yield.

CASE.—Patrick C., æt. 40, labourer, Irishman, was sent to us as a very bad back case. For four months he had hobbled around, a pitiable object, exciting the sympathy of many visitors, by heart-rending tales about his poor back.

We examined his urine and found, with some surprise, oxalate of lime in abundance. Having, however, several cases of oxaluria in the ward, we suspected him of theft or exchange, and, therefore, forced him to pass it the next day in the presence of the ward-master, when the oxaluria suddenly disappeared and never again returned. One day in December, however, he was discovered at some distance from the hospital walking erect, and with his crutches under his arm. Here was proof positive, so we took him aside, and told him quietly that he was a scoundrel. At this, his indignation knew no bounds. More solemn appeals to Heaven as to his truthfulness were never uttered. We offered to gradually let him get better, and thus save his reputation before the men, and then to send him to duty; but nothing would avail. He still persisted in his innocence. Warning him that a thorough "course of treatment" would be entered upon, such as would do him good if he were really ill, and thoroughly punish him if he were not, we left him. Crutches and canes were interdicted, and he was ordered to go to the table or go without food. The seton was the first means employed, and good care was taken to put two very large ones on each side of the spine, in the suffering "small of the back." Having pretty thoroughly irritated the parts, the tapes were removed (although the bad "humours" of his system seemed rather increased than diminished by them), and dry galvanism to the back was substituted. To apply this the part is thoroughly dried (by flour rubbed on it), and then dry metallic conductors or the metallic brushes are passed over the surface. This limits the electricity to the skin alone, and is the most painful of all the applications, which do not destroy tissue. At the close of a week he begged hard "to be let off that darned lightnin." At this time we had begun to use the actual cautery, which, as the ward-master remarked, had "rather cleared the moral atmosphere of the ward." After earnest and repeated remonstrances, this means was employed in the present case. After three cauterizations he still held out, and when about to suffer a fourth, he became, one day, slightly intoxicated, threw away all aids to movement, and danced a jig to the amazement of the ward, and to his own future sorrow. He was at once put in the guard house, where he gave up any further attempts at deceit, and was sent to the field. We learned, in a month, that he had been discharged at Alexandria, where, as he said to a comrade, the surgeons were easier to cheat than at Christian St. Hospital.

*Paralysis* has been a common disease in our wards, and of course has been often feigned. In two cases which we discharged, we were probably deceived, although, as to one of these, some doubt may exist. The other withstood every test we could apply, and was discharged, to become, soon after, a door-keeper at the Sanitary Fair, where we saw him, in a state of sudden health and vigour.

Men who are placed in the same wards with numerous cases of any malady, have an opportunity to study symptoms, and of course to imitate them with the best chance of success. Of this we saw many instances. Besides the general methods of detection, special means are available in cases of feigned paralysis. If the history of the case be a complicated one, and notes have been taken at

the first examination, it is sometimes useful at a later date, to oblige the man to restate his case in full, and to observe discrepancies. Where a wound exists, the patient would sometimes add those symptoms of nerve lesion which he had seen in other men, and in this case the anatomical relations of the wound became of moment. Galvanism was here, as in many forms of supposed palsy, of the utmost value, because, in severe nerve wounds, and in spinal lesions, the loss of electro-muscular properties is apt to follow in the muscles affected. In feigned anæsthesia, the precise limits of the loss of sensation should be noted, while the patient is blindfolded, to observe whether these boundaries are the same, and to see how they differ from day to day, and whether in wounds they correspond to the nerves supposed to be involved.

One of the best tests, too, which has suggested itself to us, and which we have used, has been ether. Several other authors (S. Kane, *Am. Med. Times*, Feb. 27, 1864; Beck, *Jurisp.*, i. 47; Baudens, *Comptes Rendus*, March 8, 1864, &c.), we find have employed it or alluded to its advantages, but we are not aware that it has received the general attention and credit which it should have obtained. If the paralysis is alleged to be complete, and especially if it be from a wound in the neighbourhood of a nerve, or is supposed to be the reflex effect of a distant wound, it is invaluable as a means of diagnosis, and should not be neglected. Tact also may be of the greatest service. We have again and again detected a man who complained of paralysis of some muscles, those of the shoulder for instance, by extending the limb, and then suddenly removing the support when least expected, or when his attention was withdrawn from the limb and directed to some other act. For a moment the muscles would almost instinctively resist the force of gravity, and give unwilling but decisive proof of their power to sustain the weight of the arm. Or again, the limb may be quickly and unexpectedly thrown up, when the motion will be resisted, or its fall prevented. By inducing consentaneous or alternate movements of well and paralyzed parts for pretended purposes, we may also often surprise a malingerer. And finally, by the employment of severe remedies, we may frequently subdue a deceiver.

The following cases illustrate, in detail, most of the above statements:—

CASE.—F. W. W., private Co. A, 121st New York, was admitted to Christian Street Hospital in June, 1863, with a gunshot wound of the left neck, on a level with the angle of the jaw, emerging near the spine. The ball evidently had injured no important nerves. He complained of stiffness and complete paralysis of the muscles of the neck, such that his neck and head were twisted to the left, and his chin pulled down, nor had he the power to use the muscles of the shoulder, especially the deltoid. The entire military history of the man was bad, and while with us grew worse and worse, till he deserted; but was, after two months, arrested and brought back. Meantime we had caught him moving his head about when he thought we were not observing him, and we finally brought him to using his neck as well as ever, by congratulating him on his gradual improvement.

But the left shoulder was incorrigible. For months (when he was in the hospital at all) he kept it to his side, not hanging loose and dangling, as a paralyzed arm does, but tightly to his body. The electric condition of the muscles was not altered, and as this was very remarkable, we detained him for some time till we could determine electrically in other men the state of muscles long voluntarily kept at rest, as on splints, for example. Soon after this we found that the electric condition of such a muscle, when not at all used, is very markedly altered, and we became sure that he used his arm out of our sight, and that neither was it injured directly nor by reflex action.

We then etherized him. He feigned admirably at first, the muscular relaxation of ether, and we thought him anæsthesiated without result. But suspecting the double game, we carried the ether still further, and had, in five minutes, the pleasure of leaving him yawning and stretching himself, the arms far above the shoulders, and every effort to move them *down* resisted by his deltoid. The movements were, of course, somewhat weaker than those of the other arm. He was sent to his regiment with a note on his descriptive list giving the facts as stated.

CASE.—Private B., Co. C, 12th Pa. Reserves, complained of palsy of the left side. Soon after his admission, we learned from a ward master, that our unfortunate cripple who hobbled about with a cane, had become drunk at a ball, and was ejected, with difficulty, by five men. There was a little doubt as to these facts, but none remained after the following week. The men occasionally were allowed to dance in the mess-room on Saturday evening, one of them fiddling while an officer was present to prevent disorder. On one of these occasions the music was too much for B., who ended by dancing an astonishing hornpipe. The usual consequences followed. Return to duty—convalescent camp and discharge—for when one of these men reaches the convalescent camp, his escape appears to be certain.

CASE.—Private Dewitt, C. R., Co. C, 68th Penna., evidently a man of considerable intelligence, was admitted into Turner's Lane Hospital in April, 1864. The first glance at the man aroused our suspicion, and we examined his military history. After serving with the three months volunteers, and a subsequent commission as adjutant, in July, 1862, he enlisted as orderly sergeant in his present company. From some trouble with the colonel, as we learned privately from some others of his regiment, who also confirmed our suspicions as to his character, he had been reduced to the ranks, and in the sixteen months after, had never done a day's duty. He asserted it was under the operation of a general order as to absentees.

He stated that after being in hospital for diarrhœa, from Dec., '62, till June, '63, at his own request he was returned to duty. While on the way to the front, at the convalescent camp, he was sitting at noon in front of his quarters, after having superintended a squad of labourers, when suddenly he felt an "oppression in the head, and fell unconscious." When he awoke, towards night, in the camp hospital, he had full use of his left side, but the entire right side was paralyzed. Sensation and motion had been lost in the right face, body, and arm, entirely, and in his right leg partially, and he was unable to talk. At another time he stated that his right leg was not at all affected, and on our expressing surprise, evidently thinking it ought to have been so, he suddenly remembered that it had been almost entirely useless. His bladder, too, he first stated to have been unaffected; but on using the same tactics, we found that he had had incontinence. By a curious physiological contradiction, too, he stated that when his face was first paralyzed, his tongue and face had been drawn *to* the *right*.

Feeling and motion had gradually returned in all the parts affected, save that on admission his right arm was still weak, his right face was said to have lost sensation wholly, and motion partially. He limited the loss of motion mostly to the frontalis, levator palpebræ superioris, and tongue.

We began our examination by a course of facial gymnastics. He could shut both eyes well; could open the left widely, and thus elevate the eyebrow; but by no effort could he thus move the right eyelid and eyebrow. We ordered him to open one eye and close the other, and vice versa, when to our amusement, his mind being distracted by the double movement, his right eyelid and brow moved once or twice with the most perfect ease. Next his tongue was examined. He inclined it also to the right, the reverse precisely of what it should be, for, in cerebral palsy implicating the 7th nerve of the same side, the body of the tongue (like the face) is usually drawn towards the sound side. Thinking, however, that, as in the case of his frontalis, we could trap him, we told him to protrude the tongue, on the plea of examining his palate. He first protruded it perfectly *straight*, and then, remembering that it ought to be para-

lyzed and crooked, he suddenly threw it to the right. Every other movement he possessed perfectly, and his pronunciation of the linguals, gutterals and labials was perfect.

The next point was the sensibility of the skin. He first had his eyes closed, and on touching him with a pencil, he stated that he felt nothing. We then suddenly thrust a needle into his face, when he also declared the absence of feeling, and he certainly did not wince. We now tried dry galvanism with Duchenne's powerful battery, powdering his face with flour, and applying the electric brush. The moment the current was established, he slid uneasily forwards in the chair till he could furtively seize the seat and brace himself, by his hands and feet, to bear the pain. By these means, and by secretly grinding his teeth, a movement betrayed by the tell-tale masseters and temporals, he bore the severe pain, which bedewed his face with perspiration, and declared, with amusing nonchalance, that "he could just feel it a little."

His body, he stated, was perfectly free from disease, but we thought we would work a little on his imagination, and proceeded to examine for spinal tenderness, remarking, casually, that we thought it an instance in which we should probably find "that tender spot about the middle of the spine, which we had so frequently found in such cases." He was completely deceived by the allusion, and on our reaching the middle of the spiné, he suddenly quaked and shrank from the pressure, saying it was very tender there. Pressure being continued, and allusion made to a patient who had fainted on being pressed at that spot, immediate syncope was threatened, and was only prevented by his breaking away from us with a look of agony. He speedily returned to duty, with a note on his descriptive list.

*Thoracic diseases* have fallen under our care but rarely in our present wards, which receive none but instances of neural disease or injury. We have met, however, with some cases of feigned consumption and heart diseases. We are indebted to our colleague, Dr. Da Costa, for most of the following particulars. In his position as surgeon in charge of the wards for thoracic maladies he has had ample opportunities for studying both real and feigned cases.

He has found that consumption, and shortness of breath are among the most frequently simulated diseases of the chest. Dyspnœa in these latter cases is never worse at night. It is not altered by exercise, and those who feign it make an unusual display of noise in breathing.

Consumption in its early stages is more readily feigned. By constant coughing, a well man can produce great irritation and congestion of the throat, and the expectoration of quantities of mucus, which he may tinge with blood from his gums, or pricking his finger, &c., and it seems cruel to send a man to duty who is "spitting blood." The only way to detect them is to watch them with the utmost exactness, and especially to make the most careful and conscientious physical examination. We are convinced that most of those who escape field service from this cause do so because of the want of confidence of surgeons in the accuracy of their diagnosis. They are not sure but that there *may* be some disease which they have failed to observe, and so they take the safest course and let the men go. No remedy can be found for this difficulty but careful and diligent study and practice on the part of the surgeons.

The uncomfortable and curious production of heart disorders by tying ligatures tightly around the arms and throat, noticed by some older writers (*Dict. des Sci. Med.*, vol. 51, p. 326), has, we are sure, no place in our army, and we think no surgeon could be deceived by such means. Nor do we suppose that medicinal agents, such as white hellebore, digitalis, &c., have been employed. The means that are used are much more ready to hand, and are safer. Such ma-

lingerers, when examined, nearly always hold their breath, apparently with the idea that it has *some* effect on the heart. To such an extent do they practise it that to avoid its obvious functional influence Dr. Da Costa always observes carefully that this function is normally continued. The use of tobacco, especially apt to be excessive in their lazy hospital life, unquestionably tends to produce functional disorders. But they also constantly assert very severe *pain* directly over the heart, which is not a frequent nor urgent symptom of true cardiac troubles. One person in Dr. Da Costa's wards, an obtrusive, persistent man, was in the habit, greatly to his annoyance, of seizing the Dr.'s hand and convulsively pressing it over a heart beating at sixty-eight or seventy, begging him to see how it beat! and what a pain he had!

Some people have undoubtedly the power to control the pulsation of the heart, either accelerating or slowing it at will. A remarkable case is quoted by Hennan (*Military Surgeon*, p. 371), in which the patient could simulate even death itself. But such cases must be rare. In Dr. Da Costa's extensive experience he is unaware of a single instance of this voluntary control over the cardiac actions.

It is, however, a point to be remembered. One of us, Dr. Mitchell, has shown, see *Amer. Journ. of Med. Sci.*, April, 1864, that in some persons deep inspiration, when long continued, will retard the heart pulse as much as thirty beats per minute, while deep expiration is competent to produce great acceleration of the pulse.

*Aphonia.*—This seems to be a disease feigned by soldiers of late years only, for scarcely any of the older writers on malingering even mention aphonia, although they treat of complete dumbness. We have now had under our care nearly twenty cases of loss of voice, more or less complete, only one of them amounting to true dumbness. This last case was seen by one of us at Frederick City, Md., after the battle of Antietam. His story was that a shell exploded very near him, and that he was so stunned as to fall senseless. He was sure that he was not hit, nor could any evidence of a blow be found a week afterwards, when first seen by Dr. Keen. In falling he had hurt the back of his neck slightly, but no bruise existed even there. When he regained consciousness, in about twenty minutes, as he judged by the movements of the regiment, he found that he had completely lost his voice. No other effect was observed. When examined, in Frederick, he gave a very intelligent and consistent account of himself by writing his answers, and his character as an industrious and willing nurse, at a time when such duty was no sinecure, was of the very best. His hearing and eyesight were perfect; all his limbs were sound; his appetite and digestion good. No laryngoscope was at hand, so that no complete laryngeal examination could be made. His breathing was regular and even, but he seemed unable to make the slightest sound. Every possible test, even to etherization, was thoroughly employed, but no sign of vocal power, not even a cough, was detected. After six months' surveillance as a nurse, he was discharged. We have no doubt of the reality of this case. Was it a case of reflex paralysis through the intermediation of the auditory nerves? We have seen cases of strabismus produced by the same cause.

But two of these cases examined by us of late have been impostors. In every instance of hoarseness, whispering voice, or loss of voice, we have used

ether as a primary test, and always in the ward, before the other patients. It has been greatly to their amusement, as well as our own, to hear a whisperer begin to lisp out his feeble and sometimes pretended silliness, but soon with charming forgetfulness roaring aloud. The jibes and jeers of the men in the ward are all that are afterwards needed to make such men ordinarily the most willing candidates for the front.

But here, as in all cases, the greatest care must be exercised in giving the ether. No examination should stop short of complete and thorough anæsthesia, unless voice reappears at an earlier stage. It must be remembered that in the army, where so many men are familiar with the use of ether, they sometimes *simulate the effects of etherization*, as well as the aphonia. Two very entertaining cases of feigned aphonia occurred at the 16th and Filbert St. Hospital, Philadelphia, for which we are indebted to Dr. J. Da Costa, one of which is in point. The man completely simulated the muscular relaxation and stertorous respiration caused by ether, and the surgeons were about to give up the case as genuine. The administrator of the ether, however, poured some more on the sponge, when, after a few inspirations, the patient passed into the real stage of excitement, shouting at the top of his voice, and that no slender one.

The second man, on regaining his senses, found himself talking without the slightest difficulty, but quickly recovering himself fell at the surgeon's feet, with clasped hands, exclaiming, with a voice and attitude worthy of a Garrick, "Thank God, doctor! you have restored my voice."

Sometimes, it is true, no voice will be elicited from a healthy man by etherization, but these cases are not frequent, and still less frequent would be the chance of its occurring in a case of feigned aphonia. If it did, the ether would of course fail to exhibit the deceit, and he could only be exposed by catching him in some other way. Practically, however, *every* case of aphonia should be etherized, even when inflammation really exists, and if no voice be elicited, should be considered genuine, and treated as such. We can hardly expect to meet with such a simpleton as Parr speaks of in his *Medical Dictionary*. "How long have you been dumb, my good friend?" asked a passenger with the most insidious humanity. "Three weeks, sir!" replied the incautious deceiver.

*Epilepsy.*—We have had a very large experience in the treatment of this malady, having had between eighty and ninety cases under our care. That real epilepsy should be so frequent in the army need not excite astonishment when we consider the numberless cases of wounds of the head, sunstroke, falls, &c., and the immense exposure incident to such a life. When compared to the number of the insane, it is not remarkable.

It is certainly, we think, not frequently feigned in our own army. The "petit mal" we have not seen feigned in a single instance, and, although it is not impossible that some cases may have eluded our observation, yet we are only aware of three cases in which any form of the disease was simulated.

That it should be feigned at all is not a matter of surprise. It is a frequent disease in the army. It is characterized by so great a variety of symptoms that it often seems to know no law, and above all its healthy intervals, so grateful to both real and assumed sufferers, its possible attacks when away from the hospital, or at hours when the surgeon is not present, and, as observed by Ballingall, its

intermitting character, which obviates the necessity of continuous simulation, are so tempting that its infrequency in our army should rather astonish us.

It is a most difficult disease to detect. Some authors regard it as easy to decide between the real and the assumed disease, and speak of it with a flippancy which shows conclusively that they have seen but little of the disease. In every case before us we have asked ourselves, "Is it real?" and have never neglected, at any hour, day or night, to observe carefully the paroxysm itself, and yet in many cases it has been only after the most patient observation and thought for months that we have been able to decide. The very reason why it is simulated is the difficulty of its detection, as already observed. It is difficult to disprove the loss of consciousness and of sensation; and the undoubted existence of reflex actions, as we shall show, adds greatly to this difficulty; the convulsive movements are of such a character, frequently in the real and almost always in the assumed fit, that the pupils cannot be observed, and the endurance and persistency of many malingerers is such as almost to set at defiance all severe means. It is chiefly "by artifice that feigned epilepsy can be fully detected," (Copeland, *Dict. Prac. Med.*, i. 1031), but even this, in a large hospital, is often only valuable in the first instance in which it is employed, since it then may become notorious throughout the ward. Forewarned is forearmed, and artifices such as have sometimes been used, such as to propose to pour boiling water on the person, and then to pour really cold water on him, or intended castration, or the insertion of a red hot ramrod into the rectum (as once proposed with success by a naval officer), all lose their value with their age and their notoriety.

Besides this, we have to contend constantly with the want of mathematical certainty in nearly all tests, and this not only applies to this disease, but to all others. The evidence is often circumstantial and cumulative, and each surgeon must judge for himself, when the point is reached in individual cases at which it shall be conclusive.

One remark should here be made as to their discharge. If the epilepsy is not more frequent than once a month, nor such as to incapacitate them from work in the meantime, they should not be discharged, but should be transferred to the Veteran Reserve Corps and employed on hospital duty. That this is quite possible is shown in our own hospital, where in the kitchen, dining-room, wards, and even on guard, we have a number of the most efficient men who are epileptics.

Many of the test symptoms, which we see largely dilated upon in the books, we are quite sure are unreliable. Thus, in true epilepsy, the thumbs are said to be flexed under the fingers, and frothing at the mouth is described as an almost constant symptom. It is said, also, that the eyes are opened and staring, that the tongue is generally bitten, that a cry ushers in the attack, &c. The cases we have seen have been nearly all produced during service, and hence our remarks apply to these alone, and not to civil cases. Now among the army cases any of the above named symptoms may be absent. Few men cry out when the fit begins, the bitten tongue is very rare, nor are the other popular medical tests of genuine epilepsy any more reliable. Injury from the fall has been considered important as testimony, but most epileptics sink relaxed before becoming convulsed or rigid, and so do not hurt themselves, or else, as is common, they have a moment's warning, and crouch at once, so as not to fall.

Gavin, *Cyc. Pract. Med.*, tells us that the true epileptic does not sweat during the fit, a proposition which we positively deny. It has been also said, that, if a cold douche checked the fit, it was sufficient to prove it a feigned attack; but this is made useless by the fact that we have seen more than one case of true epilepsy in which a cold douche would terminate at once any single fit. Nor is the expression of the face more available, because it only comes later in the disease, and in many cases not at all.

Apart from the points just referred to, there are others which are more important as tests, and which have been so looked upon by authors. The most characteristic of these, are loss of consciousness, loss of sensation, absence of reflex movements, such as immobility of pupils, want of response to tickling by muscular acts, etc.

And first, let us premise that too little has been said about the time at which these tests are applicable. In the fit quiet observation is difficult. We have seen in our wards one hundred and fifty-eight convulsions in three days and nights, and with an experience, of which this is mentioned as a sample, we confess that it is often very hard to make correct observations during a fit, and that in some cases it is impossible. The period of repose, stertorous sleep, or coma, which follows so many real cases, and is imitated in false cases, is better adapted for observation, and tests which apply to it are most reliable. In a large number of our own cases the epilepsy consisted in a succession of paroxysms, extending over one or many hours, with intervals between, of utter unconsciousness. We met, also, with cases of single fits, at every possible interval, and with a strange and confusing number of instances of recurrent vertigo, of catalepsy, and of every form of spasm known to medicine. One and all are entered on army descriptive lists as epilepsy.

The first admitted test is loss of consciousness. Consciousness is exhibited by the outward evidence of mental acts, requiring reason, memory, perception, etc. Sensation is made known as active, by evidences of pain when irritants are applied to sensitive surfaces. When actual distinct evidence of consciousness during a fit has been obtained, the man must be a malingerer. But we have met with several cases of convulsive nature, where apparent consciousness existed in the fit, and in the interval between two of its paroxysms. The man replied to questions, and gave other evidences of mental activity; yet these cases came to us labelled "epilepsy." Would the test of apparent consciousness have been of safe application in them?

The books speak of absolute insensibility as a test in epilepsy, and of the use of sternutatories, hartshorn, hot water, the cautery, and other severe means, as applications to suspected cases. They state that the real epileptic will make no response to such agents, and that if he give evidence of sensation he is malingering. Here, again, we beg leave to say that if this refers to the fit itself, it is incorrect for light cases, and practically inapplicable in cases of very severe convulsions. Epileptics in a slight fit, or at the beginning or close of a severe one, do very often move when irritated, responding by simple reflex acts, and not by co-ordinated volitional motions, calculated to evade the irritant, or to protect the part. We have seen a severe paroxysm caused by the use of the hot iron during an interval between two spasms, and almost universally they winced, and flexed the fingers violently, when a needle was thrust under the nail; but no effort was made by them to draw away the hand, or to push aside

the needle or the iron. We must, therefore, be careful as to the proofs of insensibility which we accept. This is the more necessary in a class of cases of which we have seen several instances. In these there existed a locality, large or small, which seemed to be hyperæsthetic during the intervals, and even in the separate fits. If this part were pinched when the patient was half conscious, it aroused him. If he were in the fit, it intensified that, and if in a deep after sleep, or awake, it often caused instantly a new fit. The region thus become hyperæsthetic was, usually, unconnected with the cause of the fit, and was most often the pectoral muscles, or those at the back of the neck. In these localities the muscles of such cases were at all times tender on pressure, while, during the intervals between paroxysms, occurring at brief distances of time, they were so tender as to give rise to the effects above detailed. More will be said of these singular cases in our papers on epilepsy and hyperæsthesias. We have said enough to show how great must be our caution when judging as to what amount of sensation exists in a given case of supposed epilepsy, for, as we have seen, there may occur in real epilepsy certain consequences of irritation well calculated to deceive.

Even in simulated epilepsy, where the cheat is undoubted, it is not very easy to procure decisive evidence of the existence of sensation. In this state of violent and voluntary muscular spasm the power to feel pain is greatly blunted, and the body is in the best condition to resist pain. All of us bear pain better when we set the teeth, grasp a chair, or otherwise cause severe muscular movements; while also there seems to be some instinctive relief in the active motions which every one makes use of when in sudden suffering. It might easily be shown that this is not the only instance in the economy where the use of one function lessens the perfection of another; but enough has been urged to show that in a simulated fit it is not easy to get certain evidence that the man feels. If we apply our irritants in the simulated after-coma, we are met by the fact that in the post-spasmic stage of real epileptics every conceivable amount of variety exists as to the power to appreciate painful impressions. Perfect insensibility, if it exists here, is of value as evidence; but all less distinct signs of conditions within this state are of imperfect use and value.

The state of the reflex system as to responsive movements in the fit, or in the after comatose state, has been carefully attended to in a large number of our cases. Contrary to the general belief and statement, we have been compelled to believe that in a majority of epilepsies, when observation is possible in the fit at all, it will be discovered that reflex acts follow the use of irritants. If you choose a moment of pause in a paroxysm, and tickle the foot, there will be jerking of the leg, or flexion of the toes. If a needle be run under the nail, he will wince, or stir a little, while in some instances a blow aimed at the open eye will cause winking. It will also be found that irritants often cause reflex movements in the condition which follows a fit; but again we say that no one can apply these tests in a severe epileptic convulsion. Their proper appreciation demands care and delicacy. They are useless and vain amid the storm of muscular action which makes some of these fits so terrible.

The most important test founded upon the supposed loss of reflex susceptibility is the state of the pupil. Upon no other are all authors so firmly agreed, or so emphatic. We are sorry to add that no other has more deeply disappointed us.

We may formularize the general medical opinion thus: In an epileptic fit the pupils are generally dilated, and are insensible to light, being perfectly moveless. They cannot always be easily observed in a spasm; but when they can be, the test is a perfect one. Other authors qualify this opinion, stating that in the fit the motions of the iris are very slow, or altogether abolished. It is furthermore believed that these conditions of the iris cannot be simulated, and can arise only from disease. Here is the popular medical belief, echoed in the last works on diagnosis and recruiting, etc.

We ourselves are of opinion that when, in a fit, the pupils, largely dilated, remain impassive and motionless before a bright light, the case is almost certainly a real one. But, unfortunately, this state of things is of very rare occurrence, even in severe fits. The pupils unquestionably contract in the presence of a bright light in many such cases. Sometimes the movement is sluggish and slight, in others it is almost normal as to range and speed of movement. Soon after the first of these observations had been made, and we had begun to suspect the fallacy of the pupil test, we saw a case of well-feigned epilepsy (detailed below), in which the patient had an indirect voluntary power to control the pupil by converging the visual axes in the effort to squint. The question then arose as to whether any indirect means existed by which a patient could cause the pupils to dilate. It certainly seemed as though the pupil were unusually large in some cases of feigned epilepsy. Few possess voluntary control over the pupil. Was it enlarged unconsciously in some indirect way? To answer these questions, we ourselves imitated an epileptic fit. For this purpose we lay down, and were fastened with two broad girths which ran across the shoulders and over the waist, while the hands were so strapped to the bed as to give them some play. Exactly such means were used in our wards to control within safe limits the too violent actions of epileptics whom we had not force enough to guard without these aids. The fits were simulated as closely as possible, while the members of the hospital staff, in turn, noted the phenomena.

It is needless to say that the fits thus produced would have been invaluable as clinical studies. We feel sure that they might have deceived the most acute physician. As regards the eyes, the following results were obtained: Holding the breath, so as to congest the face and head, causes no change in the pupil. Violent muscular motion instantly dilates the pupil; and so long as the movement continues, so long will the iris move slightly and sluggishly in the presence of bright lights. In some persons these effects are remarkable, but in general they are obvious enough. It seems, therefore, that the dilated pupil of convulsions may be due, in part at least, not to the cause of the convulsion, but to the spasms themselves. Malingerers are always profuse in the exhibition of spasms, and how then are they to be detected? Their pupils will be dilated and sluggish like those of many epileptics, from the muscular spasms alone. In some cases of epilepsy, undoubtedly, the pupils are immovable, and we are not aware that a malingerer can imitate this; but in a large number of real cases, and in all the feigned ones, the pupils will be precisely alike. Hence we conclude that in most cases the pupil test of feigned epilepsy is utterly worthless.

If, now, we be asked, How would you, then, detect a malingerer? We would reply that it is often a very difficult thing to do, but that we should look to the following tests: We should observe first the patient's face and mental condition, to see if they had been influenced as yet by the disease. Next we should obtain

his personal character as nearly as possible, and all the particulars of the origin of his malady and of his general health, to see if there were any contradictions developed. We should observe where and how he was attacked by the fit. One of our patients, whom we had suspected, set our suspicions at rest when we learned that he had unquestionably had a fit in his *sleep*. We should then observe one or more of the attacks, and never should we decide without doing so. If we can discover any true signs of real consciousness or sensation, unquestionably the man must be a malingerer. Hence, if he grows worse when visitors are present; if he opens his eyes, evidently to see what is going on; if he does not fall off the bed when not held, but struggles sufficiently hard to do so when he is held; or if he exhibits pain, and not reflex movements, from irritants purposely applied, or from self-inflicted injuries, or if he should suddenly recover when severe measures are proposed in his hearing, we should class him as a malingerer. Perfectly immobile pupils, *especially in the absence of violent spasms*, we should regard as an evidence of real epilepsy, but only where they were thoroughly and carefully observed during the spasm itself, which is often impossible. A genuine epileptic usually will keep his hands open if they are forcibly unlocked, while a malingerer rarely does so. His face is pallid before, and flushed or intensely congested during the spasm, while the pallor again returns after the spasm is over; and he usually is sleepy, or falls asleep after the fit is over.

There remains for consideration the ether test of epilepsy, and this we believe to be original with us, and to have been used alone in our hospital wards. We should feel glad to see it tried by other surgeons, as occasions offer. The ether test has been only of late employed by us, and has been tested in eight cases of true epilepsy, during eighteen fits.

Ether has been used by us in two ways, or with two objects in view. We have given it to supposed epileptics who were having successive spasms, with intervals of rest. Now, when thoroughly given, ether will arrest the fits, but as the man revives he will often chance to have a fit while still so far anæsthetized as to make it incredible that he should have arranged the phenomena by will. Here everything will depend on the experience and skill of the observer. If he be sure that the new fit preceded the return of consciousness, it is a genuine case. It is well to add here, what was, we think, unknown, that in some persons who are liable to epilepsy the administration of ether will bring on a fit. We are aware that this is also the case as regards the use of alcohol, which in certain epileptics is sure to result in an attack.

The second form in which we use ether as a test is also, we believe, a novel one.

When ether is administered to a true epileptic case, its first effect is to increase the violence of the spasm, but eventually the patient passes into a deep ether sleep or coma, without any of the usual cerebral excitement. He does not talk or laugh, but goes directly from the state of convulsion into a profound comatose condition. The hyperæsthetic spinal system seems to respond alone to the stimulant power of the ether, while the cerebral centres do not, or at least the only effects which are outwardly expressed are those of spinal origin. When the same test is applied to a false case, the patient presents all the usual effects of ether, talking, laughing, and acting his dreamed delusions in the ordinary way.

When ether is used during the state of comatoid sleep which follows many

fits, there is also an absence of all manifestations of excitement, and the sleep only becomes more intense.

It appears to us that the ether test, as proposed by us, is the most valuable and certain of all the means hitherto employed to unmask cases of feigned epilepsy.

The following cases will be found to illustrate many of the points discussed in the foregoing pages:—

CASE.—W ——, private, simulated epilepsy from dog-bite, and imitated the animal as far as possible. His fit was so poorly done, that even the ward-master suspected him, and in a few days, his conscience smiting him, he confessed the cheat. We never saw an attack.

CASE.—*Feigned Epilepsy.*—Admitted, Nov. 18, 1863, J. W., æt. 17, native United States; enlisted June, 1863, Co. H, Sixth P. V. Cavalry, a medium sized lad of healthy appearance. He gives the following account of himself: His family history presents two subjects of epilepsy besides himself, a sister, and his mother, who died in a fit during child-birth. He remembers hearing it said that he had fits when a child, but knows nothing of them. The second occasion of paroxysms occurred on the day following his enlistment, without provocation of any kind, except possibly the excitement of entering the service. Since that time his attacks have recurred on Friday of each week with remarkable constancy, a constancy that seems unnatural, considering the vicissitudes of diet and transportation to which he has been subjected in changing from hospital to hospital, and which gives no evidence of a periodical cause either in history or symptoms. His expression of face also is an unusual one for an epileptic; there is none of the half narcotized look so common in this disease: his eyes are sharply set and bright, the features are mobile, expressive changes are rapid, and promptly follow the thought; there is evidently no obstruction between the will and muscle. To be watched.

Ward-master thinks the attacks genuine. Type violent, eyes strabismic, pupils contracted and unaffected by light. After the attack complains of headache, and binds the head tightly with a handkerchief for several hours. His general health is, however, unaffected by the paroxysms, his appetite is good, functions regularly performed, sleeps well, and has his fits only in the ward.

The paroxysms were carefully observed by Dr. Keen, and thus noted: the prodromata usually consist of a great difficulty of breathing, which exists to a greater or less extent nearly all the time, but which is greatly exaggerated at the time of the paroxysm, so that his nostrils distend at each expiration, and he grasps his chest on both sides with his hands as if desiring to tear it open. This tightness, or constriction is said to travel from the diaphragm up, and he can answer perfectly well, and indicate its location intelligently till it reaches his forehead, when he loses consciousness. The time of this progress varies from a few minutes to a couple of hours. Just before the attack the sensation he experiences is accompanied by a pricking sensation, as if knives were being stuck into him, and this is most common at the median line of the chest. Coincident with this sense of constriction the flexors of the left fingers begin to contract spasmodically and universal trembling exists as though he was shivering from nervousness. Vertigo often precedes the fit. At the same time that he loses his consciousness his eyes are strabismic in the horizontal axis; the pupils are strongly contracted, and on being exposed to the light they vary in size very slightly, expanding and contracting, but still remain greatly contracted from the normal condition, in which the pupils are rather larger than usual, and quite sensitive to the action of light. The flexors of the fingers on both sides become tonically contracted so that it is impossible to open his fists. He champs with his teeth, and, unless prevented, often bites his tongue. The head is thrown strongly backwards with abnormal strength, and in a state of clonic spasm. He struggles considerably with his arms and legs, but not more on one side than the other. Gradually he recovers his consciousness, his eyes become straight, all the symptoms ameliorate, and, with a more or less severe headache, the attack passes off.

During the visiting hour a paroxysm occurred, and he was subjected to the ether test. The fit was fully installed, general clonic convulsions had been repeated three or four times, the eyes were strabismic, head retroverted, and he was supposed to be unconscious. There was observed to be wanting during the interval between the paroxysms that alteration of deadly pallor and flush, that curious play of the blood over the unconscious features of the true epileptic which can hardly be simulated, and which points most instructively to the important position the organic nervous system may hold in the pathology of this obscure disease. The application of the ether to the nose was resisted by well directed efforts, but the stimulant soon began to show its effects: the tongue let out the thoughts, and the brain forgot to hold the eyes convergent, and then remembered it again with a sort of betrayed look most curious to see. The effect of ether on the true epileptic, if administered during unconsciousness, is, at first, to increase the strength and frequency of the paroxysms, and eventually, if persisted in, to produce complete relaxation with profound coma. He does not rouse from his unconsciousness and laugh and talk, but passes quietly, as far as cerebral manifestations are concerned, into the anæsthetic sleep. The hyperæsthetic spinal system seems to appreciate the primary stimulating effects of ether, while the cerebral centres do not, or, at least, the effect of the stimulant is only exposed through the spinal system.

Dec. 23. Just at this time he began to seek his discharge, both personally and through the Washington authorities, but being fully convinced now of his malingering, we denied the request, and decided to establish an issue by means of the actual cautery. This was mentioned purposely, in his hearing, to the ward-master in the tone of a stage "aside," and a few days afterwards was carried into effect when he was in a fit. His evident pain and efforts at evasion, had he been a genuine epileptic, might well have led us to do him injustice, but it is to be noted that even in a true epileptic, while the sensation of pain is abolished, the appreciation of irritants, as expressed through the reflex system in reflex motion, still exists. In many genuine cases we have tried the actual cautery, pricking by a pin under the nail, tickling the feet, or pressure on hyperæsthetic parts, and they invariably endeavoured to escape from the irritant. The expression—"escape from the irritant"—is to be noted, for they wince and shrink from it, while at the same time they do not endeavour to brush it away by co-ordinated muscular movements of other parts than those irritated. In other words the action is reflex, and not in any sense voluntary. In the same manner if, in the unconscious stage, even in those cases where the eyelids are wide open, the fist or finger is struck at them, without actually inflicting a blow, they will wink ordinarily. This is another indubitable evidence of the activity of the reflex system, which must always be taken into account in pronouncing a judgment as to the true nature of asserted epilepsy.

Some three or four days after this he had another attack, as if to test our determination to apply the cautery. We answered his demand by an immediate compliance. The fit having passed off, we applied the cautery without etherizing him, much to his disgust, and equally to his relief, for no further fits occurred. Soon after he declared that he had had several at home, when, of course, all passes were interdicted, as, evidently, the influences at home were more deleterious than those in the hospital. Even the men enjoyed a grim satisfaction in his detection, and whenever he threatened to have an attack, as he did several times, they would effect an immediate cure by calling loudly "Martin, is that iron hot?" About ten days later, when the ulcer resulting from the cauterization was nearly healed, he brought matters to a head by demanding whether we thought he was "playing off." He was assured with some warmth that we did, and was immediately confined in the guard house for a week, and then sent to his regiment. To make the case complete, his parents, although he stated that his mother was dead, offered to prove that he had had epilepsy from childhood, and protested loudly against our injustice; but when requested to adduce affidavits from a physician to that effect, they proceeded to the private residence of the surgeon in charge, and offered a bribe of fifty dollars for his discharge. His subsequent history we know nothing of, but we were careful to inform both the

provost marshal and the surgeon of his regiment of his malingering. It is probably too much to hope that he ever did any duty.

CASE.—L——, May 8, 1864. Having watched for the chance for over a week constantly, it at last came. The fit was freely inaugurated with champing of the jaws, and violent struggles, especially in throwing his head back on the bed. In a previous fit in the guard house he was exceedingly careful to throw his head back only on the blanket, and his efforts manifestly declined the moment he had struggled on to the floor.

The ether was administered carefully, giving considerable air with it, so that he should not be too suddenly etherized, as he was breathing deeply and hurriedly from the great previous physical exertion. After a few inspirations the paroxysms, which had recommenced the moment the ether was applied, lost their purposive character, and became violent struggles to tear the sponge away from his face, at the same time spasmodic deglutition and puffing respiration occurred, and in a few moments he began to cry out, and to laugh. The ether was then stopped, and he began to exclaim, "Faster, faster!" Presently some one said, "It is played out." He echoed, "pi-pl-played-play-ay-ay-ayed out-to-out-out-out." At this time the surgeon left him, and as he came to thoroughly, he asked where the d—— Dr. Keen came from, for he had supposed him absent from the hospital. He was sent to the guard house immediately, and returned to duty the next morning, with a note on his descriptive list, to the effect that he was a complete and remarkably good malingerer.

CASE.—*Genuine Epilepsy.*—Jas. Cyphers, April 29, 1864, 7.30 P.M. The attack was in full progress, eyes upturned, pupils dilated, hyperæsthesia excessive, so that pressure on any part of the trunk, at least anteriorly, instantly produced a severe spasm. He had already had five paroxysms when the ether was applied immediately afterwards, while his respiration was deep and hurried. He had, after a few inspirations, another slight attack, throwing his head backwards and forwards but two or three times. After a few more inspirations he had another, which was rather a slight twitching, and then he passed very quietly and speedily into coma, without any efforts to avoid the ether sponge, or without any manifestation of cerebral excitement. As soon as he was completely relaxed, pressure at any part was borne without the slightest wincing or attempted spasm. In the ordinary length of time he regained consciousness, with nausea, which soon passed off. On recovery, he had a good deal of mental excitement, "felt as if he had been very drunk, etc." The hyperæsthesia was absent, and the paroxysms did not recur at this time. Undoubtedly a true case.

CASE.—*True Epilepsy—Use of Ether.*—Gaskill, April, 29, 1864. After suffering greatly with the pain in his side, for, say, three-quarters of an hour, he passed into a paroxysm; after the fifth the ether was applied. He had a slight jerking of the shoulders, the usual immediate prodromata of a fit, but they speedily subsided, and he passed into the state of coma without the slightest sign of mental excitement, nor did he attempt to evade the sponge, nor make any attempt at deglutition. After awaking, as usual, he had the ordinary signs of etherization in the mental wandering and hilarity so common, but it was very short. He had no more paroxysms nor any further pain, which usually follows the attack for half an hour to an hour.

May 2, 1864. Etherized him again. The attack came on without the usual precedent pain. It had ended, and he was conscious when the ether was used. After a few inhalations he had a regular paroxysm with all the ordinary phenomena. The attack was brief and mild, and he passed at once into coma. There was no attempt to evade the sponge, nor was there any cerebral excitement. On arousing, soon after, he had slight mental excitement, but no pain until fifteen minutes had elapsed.

May 5, 1864. He was etherized four times; once after an epileptic fit, and thrice for severe cramps; he was perfectly conscious each time; he passed, as before, into total coma, with precedent cerebral manifestations, and with spas-

modic deglutition. The cerebral excitement was very slight, and the subsequent stage of exhilaration very short.

CASE.—Henry Hardmeyer, April 4, 1864. The attack had existed for ten or fifteen minutes, and several paroxysms had occurred when the ether was applied. He immediately struggled violently, throwing his head from side to side. This seemed to be an attempt to avoid the ether, but it is to be observed that this is a phenomenon ordinarily attending his paroxysms. He made no effort to brush the sponge away, and no efforts at deglutition, but struggled violently in every limb. His respiration was, however, so hurried and deep that he speedily passed into the state of coma. There was at no time the least cerebral excitement, no shouting or calling on others, as he was wont to do, even in the ordinary paroxysms, but he quickly lay quietly relaxed in every muscle, breathing gently and naturally. He awoke soon after, quite conscious and excited, offering to shake hands with every one. In a few moments the spasms returned with unabated violence.

CASE.—Stahl, May 2, 1864. Several paroxysms had occurred, and when he was semi-conscious, as he usually is between the fits, the ether was applied; he was not breathing hurriedly; he passed, however, very quickly into coma without any stage of cerebral excitement whatever, and even without any accession of muscular excitement, either epileptic or as an effect of the ether. No effort was made to resist the ether, nor was there any of that choking and attempted deglutition usually seen in administering ether. He speedily recovered from the ether, and passed quickly into another paroxysm of the same character and intensity as before.

CASE.—Ridley. The attack was in progress, and he had two paroxysms; the reflex system was still active, as sticking him under the nail with a needle caused the jerking away of the hand; he winked if struck at, or if the conjunctiva was touched. The ether was given while he was not breathing very heavily; he did not try to resist or escape it, nor did he make any vain attempt to swallow, but passed without cerebral manifestations into complete coma, preceded, however, by two short and imperfect epileptic attacks. So soon as he awoke he passed almost immediately into two other attacks, evidently before regaining full consciousness. These threatened to continue, and the ether was given him again, when, without struggles or mental excitement, he became comatose a second time. He then awakened in a very short time, and in this he resembled other epileptics in whom the recovery from the coma, and the supervention of delirium is very rapid. The usual subsequent pain in his left chest, and the hysterical choking, did not appear until half an hour later, and were then slight and brief, contrary to what he had usually experienced.

May 6, 1864. Etherized him again while in the fit; he became comatose without mental excitement; spasmodic deglutition was present, but he did not seek to evade or thrust away the sponge. It is to be observed that the globus hystericus is usually a marked symptom, both during the fit and subsequently. No subsequent pain or globus hystericus appeared, but a short cramp occurred.

CASE.—Marsh. The fit, which was very mild, so far as the muscular spasms are concerned, was in full progress, and had continued for about half an hour, when the ether was administered. He endeavoured to avoid the ether, not only by movement of the head, but also by seizing the ether sponge, and thrusting it from his mouth, with his right hand. He passed, however, directly from the stage of epileptic unconsciousness without spasmodic deglutition into anæsthetic coma, perfectly relaxed and quiet, without the least cerebral excitement, and remained in this state for nearly three-quarters of an hour, when, without the slightest interval of consciousness, the usual prodromata returned, especially the twitching of the flexors. At first very slight, the spasms increased in force gradually until the attack developed itself in full force. The interval between the two paroxysms was much increased by the ether. After repeated attacks during forty-five minutes he became semi-conscious, and finally fell asleep, and slept until next morning, when he still complained of drowsiness.

In concluding this paper, which has been written among other and excessive professional labours, we desire to state that it is not meant to be a complete treatise on malingering. We have desired principally to tell what we ourselves have witnessed, to present to the army surgeon new tests, and to criticize the statements of others in the light of opportunities such as have been rarely presented.

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ART. V.—*Hints Respecting the Extraction of Foreign Bodies from the Ear and Nose.* With an engraving. By S. D. GROSS, M. D., Professor of Surgery in the Jefferson Medical College of Philadelphia.

ALL writers upon the diseases of the ear speak of the great difficulty that is generally experienced in removing foreign bodies from the auditory tube. Von Tröltsch, whose work has recently been reproduced in this country, and whose sentiments may be regarded as expressive of the latest views upon the subject in Germany, has uttered this remarkable sentence: "Generally the presence of these bodies in the ear is less injurious than the attempts to remove them." This language, written a little more than a year ago, is full of significance. It clearly shows how incompetent medical men generally are to perform apparently so trifling an operation. Proceeding a little further on, the reader of Von Tröltsch's work meets with another curious sentence. "If," says he, after alluding to the swollen condition of the ear, and the impossibility of dislodging the intruder with the syringe, "a case came under my observation where an impacted body produced such symptoms as to indicate an energetic mode of treatment for its removal, and delay was not practicable, I should hasten to extract it by an operation, by making an opening through the wall of the meatus, so as to admit of its being approached and seized from behind." In speaking of the difficulties of such a procedure, he adds: "I have, however, satisfied myself on the dead body that it is easy to separate the auditory tube from the squamous portion of the temporal bone, and thus with a curved aneurism needle reach the membrane of the tympanum. The operation is doubly easy in children in whom there is hardly any bony canal." The means which Von Tröltsch recommends in ordinary cases for effecting dislodgment of foreign bodies are Daviel's curette and injections of water.

"Rude efforts," says Mr. Wilde, "made to extract foreign bodies from the ear are as likely to cause mischief as these bodies themselves." The means which he advises for accomplishing the object are the syringe, curette, spatula, and toothed forceps.

Mr. Toynbee, no mean authority upon any subject relating to the diseases of the ear, in speaking of extraneous substances in this organ, remarks:

"Cases are sometimes met with in which the most lamentable results have followed attempts at removing foreign bodies by instruments. Death itself has not infrequently happened; and where the life of the patient has been spared, the ear has sometimes been destroyed and the portio dura nerve paralyzed." The syringe and tepid water are the means upon which Mr. Toynbee chiefly relies for the removal of all rounded solid substances. For the extraction of wool, cotton, paper, rags, and other soft material, he employs, when injections fail, a pair of lever-ring forceps, an instrument of his own invention.

The above passages, representing the views of three of the most distinguished aurists of the present day, are quoted for the purpose of showing the most approved methods of extracting foreign bodies from the ear, and the violence that is often inflicted in rude attempts of this kind. From the fact that the works of these authors, especially those of Wilde and Toynbee, have been widely circulated in this country, it may fairly be assumed that the practice inculcated in them is the one generally pursued by our medical men. Not long ago I read in the report of a discussion before a learned body in a neighbouring city, that the best instrument for extracting a foreign substance from the auditory canal was an ordinary pocket probe bent at the extremity; and, as the remark was made by a distinguished professor, I take it for granted that he is not the only surgeon in this country who thinks so.

For a number of years past, I have entirely limited myself, in the extraction of foreign bodies from the ear, to the little instrument delineated in the accompanying sketch, originally described in my System of Surgery,

and now regularly put up in all the ordinary pocket cases manufactured in this city. Composed of steel, and therefore entirely inflexible, it is about five inches and a quarter in length, very light and delicate, cylindrical and somewhat rough at the middle, to afford a good hold for the thumb and fingers, spoon-shaped at one extremity, and furnished with a little tooth or prong at the other. This tooth, which projects at a right angle from the shank of the instrument, is exceedingly small, and therefore admits of easy insinuation between the foreign substance and the auditory canal. The curette or spoon is also very delicate, and bent considerably more than the ordinary cataract curette. Provided with such a contrivance as this, no surgeon, however unskilful or inexperienced, can possibly fail in his object.

The plan which I always adopt, when a case of foreign body in the ear is brought under my notice, is to place the patient in an easy recumbent position, with the head slightly raised upon a pillow, and to administer chloroform to the extent of entire obliviousness. This is absolutely necessary when the patient is a child, or a nervous, excitable adult. The opera-

tion is greatly facilitated if there is a clear light, although this is by no means indispensable. Taking hold of the upper and back part of the concha, and pulling it gently so as to efface the curve at the entrance of the ear, I carefully pass the narrow extremity of the pick sidewise between the intruder and the wall of the meatus, and bringing the little tooth or prong behind it, I readily jerk it out, no matter how deeply it may be buried, by a kind of lever movement with the handle of the instrument. The operation is generally the work of a few seconds, and is altogether free from hemorrhage. No possible injury can be inflicted upon the meatus, much less upon the membrane of the tympanum, if proper caution is used in the management of the pick. In this manner I have extracted quite a number of substances of various kinds, as pieces of slate pencil, grains of corn, beads, pebbles, and cherry-stones, in most cases after vain attempts at relief had been made by other practitioners. When the substance is very small, the object is sometimes most readily attained by the use of the curette, but in general the prong is altogether preferable, whatever may be the form, size, or consistence of the body, whether round or angular, small or large, hard or soft. A pebble, grain of coffee, bug, or pellet of paper, wool, or cotton, may all be equally easily extracted. Ear wax, however hard, or however firmly impacted, is more readily removed with such an instrument than with any other contrivance of which I have any knowledge.

Insects may, in general, be readily dislodged by filling the ear with water or oil, which have the effect of suffocating them. When they are dead, they may be promptly extracted in the same manner as any other extraneous matter.

There are certain rules to be observed in the extraction of foreign bodies, no matter what means may be employed for the purpose. In the first place, the surgeon should be perfectly satisfied that there really is an extraneous substance in the ear; or, in other words, that the patient is not labouring under a false alarm. Such an occurrence is by no means uncommon, especially when the individual is a nervous, excitable female, impressed with an idea that a bug has passed into the ear, or that the head of a pin has fallen into it. A careful inspection with the aid of a good light, either solar or artificial, will be the safest guarantee against any error of this kind.

Secondly. The meatus should never be meddled with when, in consequence of previous efforts at extrusion, it has become severely inflamed and more or less swollen. Here the proper plan is to wait until, by leeches to the inside of the tube, active purgation, light diet, and other measures, the morbid action is sufficiently subdued to admit of the requisite manipulation. The want of this precaution has sometimes led to violent inflammation, seriously imperilling life. The ear, if let alone, is generally remarkably tolerant of the presence of foreign bodies, even when rough or of large size. Not long ago I removed, at the clinic of the Jefferson Medical Col-

lege, a large cherry-stone, which had been lodged deep in the meatus of a little girl for seven years, without any other inconvenience than slight occasional dizziness.

Thirdly. The foreign body is sometimes concealed by blood, pus, or cerumen, thus necessitating the use of the syringe and tepid water, before an attempt is made at extrusion.

Fourthly. The after-treatment should be conducted upon general antiphlogistic principles. Ordinarily, little, if anything, is required. It is only when the parts have been rudely handled that active measures will be needed, and even then the case will usually yield to a brisk purgative and the application of a few leeches to the meatus, along with a few doses of Dover's powder. Should the brain be threatened, blood must be freely taken from the arm. The syringe with tepid water, simple or medicated, will be required if there is any considerable discharge of matter, especially if it is offensive and irritating.

I do not wish to be understood, from what precedes, to say that I disapprove of the use of the syringe for the removal of foreign bodies from the ear. The operation, if properly performed, is frequently crowned with success; but it is often tedious, always disagreeable, and sometimes wholly inadequate. Wool, cotton, paper, cloth, and similar articles, may often be easily and successfully removed with the forceps. As to the pocket probe, bent at the point, no one who knows anything of the nature of such an operation would ever think of employing it. The idea of separating the auditory canal from the squamous portion of the temporal bone, with a view of obtaining access to the extraneous substance, as suggested by Von Tröltsch, is so absurd that it ought to be ranked among the exploded notions of the barbarous ages.

The removal of foreign bodies from the *nose* is usually, in the hands of the general practitioner, an operation of great difficulty; quite as much so, indeed, as the withdrawal of an extraneous substance from the ear. The efforts that are made to accomplish the object are commonly of the most misdirected and herculean character; the struggles of the patient, ordinarily a child a few years old, are violent, if not uncontrollable, and the result too often is a bloody, fruitless battle, not less distressing to the parents than discreditable to the surgeon. This is not an exaggerated picture. A practice of upwards of a third of a century has afforded me many unfortunate illustrations of its truthfulness; and yet the operation, if properly performed, is one of the most easy and simple in surgery. As commonly executed, its effect is, not extrusion of the foreign body, but its further and deeper impaction in the nose. The instruments generally employed are the forceps, a grooved director, or a probe bent at the extremity. Need we be surprised that frequent failure should be the result under such circumstances? The extraction of an extraneous substance with such con-

trivances is altogether a blind procedure. The surgeon who succeeds with them deserves great credit for his good luck; for, really, it amounts to nothing else.

My practice in these cases is simply this. In the first place, the child must be properly secured. If he is very strong and rebellious, he should be wrapped up in a sheet or apron, to prevent him from using his hands and feet. Chloroform is seldom necessary. The head, inclined slightly backwards, should be immovably fixed by an assistant, while another assistant holds the patient upon his lap. The small extremity of the "ear pick" is then carried flatwise upwards into the nose in the direction of the bridge, until it is fairly beyond the foreign body, when, the point being depressed, the little hook or tooth is at once brought in contact with the substance, and extrusion effected by a kind of jerking or wriggling movement of the thumb and fingers. The operation is generally over in a few seconds. Trouble can arise only when the substance, in consequence of previous abortive efforts, has been pushed back into the nose, or when, as occasionally happens, the nostril is filled with blood. I have myself never encountered the slightest difficulty with the instrument in question, and believe that failure in any case is impossible, if it is judiciously used.

Practitioners generally do not seem to be aware that foreign substances in the nose are commonly situated very superficially. In most cases, they occupy the entrance of the nostril, resting against the anterior extremity of the inferior turbinated bone, or between this bone and the nasal septum. It is seldom that they are pushed by the child into either of the chambers of the nose, even when they are of small size. If rude and protracted attempts, however, have been made at extraction, the probability is that the body will be found upon the floor of the nostril, or firmly wedged in between the turbinated bone and the nasal septum. In such an event, the operation will be more difficult, but still perfectly feasible. In a case under my charge not long ago, the substance, a small bean, had been pushed far back into the inferior meatus, and I was in doubt, for a few moments, whether it could be reached. Keeping the point of the instrument in close contact with the surface of the turbinated bone, I soon succeeded in passing it beyond the extraneous body, which was then extracted with the greatest facility.

As foreign bodies in the nose are invariably productive of more or less irritation and fetid discharge, they should always be extracted as speedily as possible. In a case reported by Dr. Hays, the able editor of this journal, the substance, a glass button, kept up incessant inflammation and suppuration for upwards of twenty years. Its extraction was followed by a speedy cure. Whenever a young child is brought to a surgeon with a fetid discharge from the nose, especially on one side, a careful search should be made for the presence of an extraneous substance. A few months ago, a stout, fat child, twenty-one months old, came under my observation on

account of a very profuse and offensive profluvium from one of its nostrils. Suspecting the existence of a foreign body, I carefully explored the affected cavity with my instrument, and, much to the surprise of the mother, brought out a large paper pellet.

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ART. VI.—*Report of a Trial for Poisoning by Strychnia.* By GEO. F. BARKER, M. D., Prof. of Chemistry, Western University of Pennsylvania, Pittsburg.

DANIEL E. SALISBURY was tried at a Court of Oyer and Terminer held at Cortlandville, Cortland County, N. Y., on the 15th day of June, 1863, for the murder of his wife, Frances E. Salisbury, by poisoning her with strychnia.

Instances of poisoning by this alkaloid are extremely rare, especially in this country, and still rarer are the convictions which have followed; I have been able to learn of only a single one in the United States. This fact alone would give interest to the present case. But there are special features in it of great value to the toxicologist, which will warrant its publication. And as a complete knowledge of all the facts gives a proportionate value to any record of this sort, this must be my apology for detailing these facts at some length.

The history of the case, as developed by the evidence both on the coroner's inquest and on the trial, is as follows:—

The defendant, Daniel, was the son of Elisha and Sally Salisbury, who resided about two miles and a half east of the village of Cortlandville. Mr. Salisbury was a farmer of some means, and an exemplary man in the community. The family consisted of two sons and three daughters. The elder son, Orlando, was married, and lived not far from the father's house. The eldest daughter, Lavinia, was away much of the time teaching school. The other members of the family, consisting of the defendant, and his sisters Rosetta and Esther, respectively fourteen and thirteen years of age, lived with the parents on the farm.

The defendant first met Miss Newton, who afterwards became his wife, at a camp-meeting, a year and nine months previous to their marriage, which took place the day of their second interview, June 2, 1861. His parents were strenuously opposed to his being married; first, because he was too young, being in his nineteenth year; and then, because he had nothing with which to support a wife, as he worked on the farm for his father, for which he received only his living. He therefore kept it from them, and took his wife to her uncle's, in the town of Homer, the night after they were married. The next day, however, they went into the vicinity of the father's house, and spent the night at the house of Mr. Stafford, a neighbour. They went after this to his brother Orlando's, about fifteen rods from the father's. Here they remained about a week, during which time they made a call on

the parents. At the end of this period, Mr. Salisbury consented to allow defendant and his wife to live with them. They had been married but about a fortnight, when defendant's sister-in-law told him that there were reports in circulation concerning the chastity of his wife. These were based, no doubt, on the fact that a young man had been arrested in 1857, at the instance of her father, for abducting her under promise of marriage. Defendant stated that his brother had found some bottles in her trunk which he supposed contained medicine to doctor away the child. One day about this time deceased came to a neighbour's, weeping, and saying that her husband was going to leave her. Presently he drove up in a wagon which contained her things, saying that he knew all he wanted to about her; that if she was as reported, he did not want to live with her; and that he should take her to her uncle's, in Homer, and never go near her again. Mr. Stafford persuaded him to leave her and the things at his house. He then left, promising to return and spend the night there, which, however, he failed to do. In the morning the deceased returned to Mr. Salisbury's. The week after this affair the defendant told his brother that he became satisfied that his wife was virtuous from the fact that she had her monthly periods. They then lived together at his father's until the succeeding fall, not very pleasantly, it seems, for the eldest sister, Lavinia, when at home on a visit, left the house on account of difficulties with the deceased, declaring she would not live in the house with her; and deceased frequently went to the neighbour's above mentioned, crying and complaining of ill-treatment from members of the family, saying that even her husband was cold and unfriendly.

In the month of September following, defendant enlisted in the army. He went over to the adjoining village of McGrawville, and called at the house of a young lady to whom he had paid some attention previous to his marriage, with the intention of persuading her brother to go with him. She said she thought a married man ought not to leave his wife and go to war. He replied that he should not have enlisted if he had got the one he wanted. On his return home, his mother told him he must provide a place for his wife if he joined the army, as she could not have her left on her hands. When he went to report at Elmira, he engaged a place for her with a Mr. Perkins. She accompanied him to the depot, but he treated her so neglectfully as to attract the attention of the bystanders. A day or two after, Mr. Salisbury was going to Homer, and, at her request, he took her to her aunt's, where she remained about a week. She expressed her feelings to her aunt, and asked if there was not some root she could take to procure an abortion, saying she did not care if it did kill her. Defendant was absent at Elmira a week or ten days, when he returned, having been rejected on the examination. He then went to Mr. Perkins's with his wife, and lived there about a month, he working on the farm. At the close of this time they returned again to the father's house, where they remained through the winter. During all this season he was exceedingly arbitrary towards her, requiring from her the most abject obedience.

In February, 1862, deceased was taken sick. Defendant went for Mrs. Bolles, a midwife, saying to her that he thought his wife was going to be confined, and that he wished her to dispose of the child, asking if there was not a spot on the head where pressure would produce death, or if the cord could not be left untied. The midwife, to her credit, refused to do anything of the kind. Upon making an examination, no appearances of approaching confinement were indicated. Still, defendant's sister-in-law, who was present, seemed determined to have a child born; so much so, that Mrs. Bolles for-

bade them to leave her alone with the deceased. In a day or two she came out with the measles, and was treated successfully for them by the midwife. Defendant manifested a singular indifference to his wife's illness, for which he was reproached by a hired man of his father's, who told him that she was sicker than he was aware of, and that she might not live. Defendant replied that he thought Mrs. Bolles was as good as any one to attend her, and that, at all events, he should not mourn for her till she was dead. He did not stay in the room with her, but slept up stairs, leaving her alone; and one night she rose and crawled to the fireplace and made a fire, as she was troubled for breath.

On the seventh of April deceased was confined. She was attended by the midwife just referred to, and was safely delivered of a son. She recovered as usual, without any untoward symptoms. Three weeks afterwards, owing to some difficulty in the family, defendant furnished one of the rooms in his father's dwelling, and with his wife commenced keeping house there, she doing her own work. Not being very strong, and having a large babe to nurse, she complained frequently of headache, sometimes accompanied with dizziness.

In the early part of May corn was planted on the farm. When it had come up, the crows were very troublesome in uprooting it. One day, towards the end of the month, defendant's father said to him that he had heard of several instances where crows had been killed with strychnine, and he did not know but it would be a good plan for them to get some. Defendant said he guessed he would get some and try it. Accordingly, on the fifth or seventh of June, he went to the store of a druggist in the place, and asked if they had any poison. On being answered in the affirmative, he said, "Have you any strychnine?" He was told they had. He asked the price, and said he would take two shillings' worth. The contents of one of the ordinary 55-grain ($\frac{1}{8}$ oz. av.) bottles were poured out upon a paper, and divided into three parts; one of these was put into a vial which the defendant had brought for the purpose. As the clerk laid it down for a moment, to wait on another customer, defendant took it and carried it away before it was labelled. A person who was in the store at the time, and knew the facts as to the purchase, seeing defendant's father the same day, told him about it, and asked him to send it back, that it might be labelled and recorded. When Mr. Salisbury returned home, he asked defendant if he had purchased a bottle of strychnine. He replied in the affirmative, saying that he bought it to kill the crows that were picking up the corn. His father told him to take it right back, as he did not want it round there at all. Defendant said that he would do so. In two or three days he returned to the druggist's, and had it labelled, but did not leave it. Nor does it appear that he used any of it for killing crows, as he intended.

Not many days after this defendant called upon Dr. Bolles, an eclectic physician of the place, and told him that his wife thought she was pregnant, that her stomach troubled her as it did before her child was born, and that she wanted some medicine to produce an abortion. Dr. B. asked him if she nursed her child. He said she did. He asked if there was any appearance of the menses. Defendant replied that there was not. The doctor said he did not think it possible that she was pregnant, but that he would prepare some medicine for her, though he could not do it that night, as he was tired, and he could not prepare it in less than three-quarters of an hour. Defendant said if he would prepare it and leave it, he would call

for it. He called twice within the next ten days, but did not find the doctor in. Mrs. Bolles mentioned this to her husband. He said he would leave something with her in case he called again. He therefore took half a tablespoonful each of golden seal and black cohosh, and a teaspoonful of cubebs, all in powder, and mixed them with a little pulverized liquorice. This he designed, as he says, "simply to strengthen the stomach, allay irritation, and act as a gentle tonic." The next week the defendant came again. The medicine was given him, with the direction to steep the whole in a quart of water, and take a spoonful occasionally. The medicine was prepared and taken by the deceased.

On Sunday, the twenty-ninth of June, there was a funeral of a soldier at McGrawville. Defendant went over, and attended church in the afternoon with his former inamorata. After service, he accompanied her to her home, and, upon her invitation, he stayed to tea, which was served about four o'clock. After tea, in presence of this young lady, her parents, and her two sisters, defendant, after making some general remarks about the war and the soldier who had that afternoon been buried, changed the conversation very abruptly by saying that he had heard of a woman who had killed four husbands before she was detected, by putting tacks in their ears. He said it was easy for one person to get rid of another by using arsenic, but that strychnine was better, because it would do it up quicker, and could not be detected after death. Strange to say, instances were quoted to him by the family in support of his assertion; and a case was mentioned which had occurred in Cortlandville, where no strychnine was found, though it was suspected to have caused death. Another case was alluded to, where a man had poisoned his wife with arsenic, but was detected and hung. Upon which defendant reiterated his former statement that strychnine was better, because it could not be detected in the stomach. The young lady he was visiting then said to him she thought it was time for married men to be at home. He replied that he had not got such a woman as he expected. Her brother-in-law and his wife coming along in a wagon just then, they asked her to go home with them. She went with them, and defendant jumped into the wagon and rode to their house. He remained there until nearly ten o'clock, when he returned to his father's house in Cortlandville. His wife had not been to church that day, but was well, and took tea with Mr. Salisbury's family.

The next morning, Monday, June 30, defendant and his wife took the breakfast which she had prepared, as usual, between six and seven o'clock. After milking, his father sent him away some three miles for a veterinary surgeon to treat a sick horse he had, instructing him to get some cabbage-plants at the village on his return. He reached the horse-doctor's between eight and nine o'clock, and remained there until about noon, when he started to return. He reached home with the cabbage-plants about two. After breakfast, his wife, the deceased, did up her customary morning's work, and about ten o'clock she went into the wood-house and commenced the weekly washing for herself, husband, and child. She finished the heaviest part of it, all but rinsing the clothes, before dinner. She ate dinner with Mrs. Salisbury, returned and finished the washing, and, after spreading the clothes out to dry, went into her room, as was her custom, and lay down. When the defendant returned at two o'clock he found her asleep. He went back into the buttery and ate a dish of bread and milk and a piece of cake. She soon awoke, and complained of some fatigue, and said she did not feel

very well. Defendant's mother went in and took the baby, and, shortly after, he, having finished his dinner, came in and lay down upon the bed. In a few moments his father called him, and he went out and began to set out the cabbage-plants. He was presently called away by the horse-doctor, with whom he went into the kitchen, to prepare the medicine on the stove. When it was ready, they took it to the barn. This was about half-past five. Meanwhile deceased had been preparing supper for herself and husband, which consisted of toast, without tea, and which was ready at six o'clock. Defendant came in, and went to his own room, to take supper with his wife. His youngest sister, Esther, took care of the baby. At the same time the parents took their supper in the kitchen, the doors communicating with both rooms being open. Defendant finished his supper in about five minutes, and went into the kitchen. He asked his mother what kind of tea they had. She replied, "Boughten tea." He then took up her saucer, drank from it, and ate some wheat pancakes. When he had finished, he went out with the hired man to do the milking. While thus employed, deceased came to the door, and said, in a joking way, "Dan, if you want another supper, I'll get you one; you ate all you could at your own table, and then ate at your mother's, and if you want another supper, I'll get it." He took it in good part. She remained in the kitchen half an hour or more, when she went down into the cellar and brought up some potatoes, which she prepared for breakfast, and put them with some belonging to Mrs. Salisbury. She then went to her own room to retire. This was about half-past eight o'clock. Defendant and the hired man carried the milk into the milk-room. After milking, defendant went to the barn to feed the horses. On his return, he met his brother in the road, who had just come from the village, and who handed him a letter for his father. After some conversation, about nine o'clock defendant went to the house. When he entered the kitchen, his father was reading from the Bible. He sat down in a chair near the door, and when the devotional exercises were concluded, he handed his father the letter, saying, "Are you one of the deacons of the Baptist Church?" His father replied, "I am," and opened the letter. Defendant stayed a moment, to see who the letter was from, and then went to his own room, closing the door after him. His father continued reading the letter. It was not long, covering only a single page of note-paper, and written in a coarse hand; but there were two words which he was unable to make out. He then handed it to his wife, took off his boots and stockings, filled and lit his pipe, and commenced smoking. He had taken but a few puffs when his wife handed the letter back to him, saying she could not read it. He took it, and had read the first line, when a loud scream was heard from defendant's room. Mrs. Salisbury instantly took a candle and started to go there. While crossing the dining-room, she heard deceased say, "Don't, Dan, don't!" or something similar. When she reached the door, she called her husband. He came, and went into the room with her. There was no light there. Deceased lay on the bed, near the front side, towards which her right arm, upon which her child was lying, was extended. She was upon her back, and her body was straight. The defendant, who was undressed, was on his knees on the back side of the bed, endeavouring to hold her on the bed. The mother spoke, and said, "What in the world is the matter, Frank?" Deceased looked at her, opening her eyes and partly raising her head, being perfectly conscious, and said, "Oh, mother, mother!" The child was taken from her and given to

Rosetta, who, with the other members of the family, aroused by the screams, had come into the room. The father, upon his entrance, placed one of his hands under each shoulder, for the purpose of raising her up. Her muscles were rigid, and her body stiffened. She appeared to be in a "spasmodic fit," as he termed it. There was a twitching of the muscles of her shoulders under his hands. Her hands, arms, and legs, as well as her body, were stiff, and her head was thrown back. Her breathing was very hard, as though it was very difficult, her breath being forced through her teeth, making a shrill noise. Mr. Salisbury could not raise her, so he waited until the spasm had passed. In a few moments the muscles relaxed, and she was raised into a sitting position. Some camphor was put on her lips, and they attempted to give her some internally; but she carried her head back, as though it was offensive to her. Water was then given her, and she drank two or three swallows of it. The father said, "Frank, do you feel any better?" She opened her eyes, and made an effort as if to speak, but was unable to articulate anything. Defendant had said nothing on the entrance of his parents, or in reply to their inquiries, nor did he do anything for his wife, but seemed like one half paralyzed with fright. His mother said, "Daniel, she is in a fit; get up and help rub her." He said he would as soon as he could dress himself. He did not, however, wait to dress, but got up and assisted to rub her hands and arms. When her hands were released, she seized her abdomen violently, as if to tear it, such was the intense pain there. His father then told him to get up, dress himself, and go for the doctor, while the hired man went across the way for Orlando and his wife. Mrs. Salisbury rubbed her face and stomach with camphor. She said in presence of the defendant, who had not yet gone, "I'm afraid she has been eating or drinking something that is poison, for I saw roots steeping on her stove two or three weeks before this." Some one then spoke of their neighbours, the Staffords, and defendant said he would go for them. After an interval of about five minutes she went into another spasm. Her lips were slightly parted, the teeth closed tight, the breath forced through with considerable exertion, and she groaned as if her suffering was intense. About this time, Orlando and his wife, who had been sent for, came in. Mrs. Salisbury said, "What in the world is the matter? is she poisoned, or what is the matter?" Orlando replied, "If there is any poison about her, give her some lard." Some was melted and brought, but her teeth were so firmly set, that it could not be given. Then came another intermission, during which Orlando was sent for the doctor. Her head returned to its natural position, and she was easily held up. She was spoken to, called by name, and asked if she felt any better; but she seemed to take no notice of it. It lasted about ten minutes, when she had a third spasm, not quite so long or so hard as the others, though similar. Water was thrown on her face and head, which seemed to convulse her, but slightly. A mustard poultice was prepared and applied to the stomach. During the next intermission hot water was prepared, to put her feet in. She was moved down in the bed, so that her feet hung off and could be immersed. Almost immediately she went into the fourth spasm. The defendant, who had gone for the Staffords, met his brother Orlando, and told him she was dead. When he arrived at the neighbour's house, he said to Mr. Stafford, who opened the door, "Eli, I want you to come up to our house immediately. Frank is dead; she has poisoned herself." Passing in, he repeated the same words to those inside, and then went up stairs to the room of a

hired man, where he made the same statement. The man asked him how that could be. He replied that she had been taking medicine of Dr. Bolles, and had been digging roots round the yard, and might have got hold of some root that poisoned her. He then went down stairs. In a few moments they all left for his father's. On their way they met the elder brother going for the doctor, who told them she was not yet dead. Defendant was then asked what the matter was. He replied substantially as before, adding that she had not been well for a long time. When they reached the house, she was sitting up in bed, supported by Mr. Salisbury and the hired man, with her feet in the water. Her eyes were open, and were very bright and natural. Mrs. Stafford, who was quite intimate with deceased, approached the foot of the bed, when she looked at her and appeared to recognize her. Her limbs were rigid, her hands half clenched, and she was frothing at the mouth. The mother said, much excited, "Is she going to die here on our hands?" The father replied, "If she does, we must do all that we can to save her, and keep quiet." This last spasm was the most severe of all. It lasted till her death, which took place in about five minutes from the commencement of the last spasm, and thirty minutes from the first attack. During the whole time she neither vomited nor purged. When defendant came in with the Staffords, he did not approach the bed, but sat down in a chair in the opposite corner of the room. When she was in the last spasm, he asked if she was dead. His father replied that she was not then dead, but probably would die. He made no reply to this, but in a few moments asked the same question again. Upon being told that she was dead, he remarked that he hoped "she had gone home to glory, to a better world than this." When she died, Mr. Salisbury straightened her back in bed, until the family physician, Dr. Hyde, who had been sent for, should arrive. The family then went into the kitchen, and conversed with the neighbours about the facts already narrated. Defendant's mother asked him if his wife had been taking poison or anything of the kind. He said, "Not as I know of." She then asked him if there was any poison about the house, that she could get hold of. He said there was none. She then said to him that he was not well, and had better go to bed; but he remained in the kitchen, sitting by the stove. Dr. Hyde now arrived, about half an hour after her death. He states that he saw the body only as it lay; placed his hand on the heart and on the wrist; did not further touch it, but observed nothing which was unusual in its appearance, except its rigidity. The neighbours then assisted in laying the corpse out. As one of them went to the kitchen for some water, she noticed the defendant shutting the door leading from that room to the wood-house, apparently coming in. The body was found quite rigid, so much so that the assistance of two men was required to straighten the limbs sufficiently to remove the clothes. The fingers were not entirely closed, but partially bent, and so stiff that it was impossible to straighten them. Several discolorations were noticed upon her neck. There were three spots on the left side, which looked like bruises, commencing under the ear, and running down under the jaw. On the right side there was one, about opposite the others. They were about the size of the end of one's finger. After she was laid out, defendant retired, considerably before the rest of the family. This was about eleven o'clock. As he seemed to the parents entirely exhausted, one of the hired men present was sent up with him, to render him any assistance which might be necessary. But this man saw no signs of exhaustion, and says he went to bed

without difficulty. Here he rested until half-past four the next morning; then his mother, across whose mind the purchase of the strychnia had passed in the night, went up and asked him what he had done with it. He told her she need not give herself any trouble about it, for it was not in the house. She then asked, "Is it where Frank could have got hold of it?" He replied that it was not very likely she could have found it.

About eight o'clock on Tuesday morning, defendant was seen by an uncle of the deceased at the railway station in Cortlandville. He said to him, "You have started out pretty early." Defendant said that there was cause for it; that his wife was dead; and that she died in a fit. He then drove on to see his wife's father, Mr. Newton, who lived then at Groton about five miles from Cortlandville. He had not gone more than half way, when he met Mr. Newton, on the way to McGrawville. Defendant stopped and said, "Good-morning," which salutation was returned. He then said abruptly, "Frank is dead, and I was just going to your house." Mr. Newton recovered from his surprise in an instant, and said, "What was the matter of her, Daniel?" "She died in a fit," said defendant. Mr. N. replied, "Her mother died suddenly," and asked if she was sick long. Defendant answered, "No, not but a few minutes." He said, in answer to a question by Mr. Newton, that she had not been sick previously, having done her washing the day she died. Defendant then asked Mr. Newton where he would have her buried. Mr. N. said he guessed she had better be buried with defendant's folks, so he could lay beside her. He then asked if Mr. N. had any choice as to the minister who should preach the funeral sermon. When Mr. N. said that he had none, defendant said, "Well, then, we will have the Baptist minister." He then notified his father-in-law that the funeral was appointed for the next morning (Wednesday) at ten o'clock, and said, "You'll be there, won't you?" Upon receiving a reply in the affirmative, he drove off, returning to Cortlandville. Meanwhile deceased's uncle at the depot had heard that she was poisoned; and on defendant's return, he told him of this report, adding, "And I hear that you bought poison and carried it home." He told him that it would be of no use to deny it, for an examination was to be made, and it would be found out. Defendant hung his head and hesitated a moment, and then said that he had bought some *arsenic* and carried it home. He then rode away, returning again to his father's house. During the day, he, with two hired men, went to Port Watson to dig the grave. The conversation turning on the subject of poison, defendant said she was not poisoned, for there was no poison on the hill that she knew anything about. Later in the day, as he was catching his horses, one of the hired men said he did not see how she could be poisoned; to which defendant replied that he did not see how any person could have a better chance than she did to poison herself. Mr. Newton, who had gone to McGrawville, returned to Cortlandville in the afternoon about five o'clock. After seeing his brother at the depot and consulting with him, he sent his brother's son and son-in-law over to Homer for the coroner. This coroner was a Dr. Gazlay—an eclectic practitioner—who sent word that he would hold an inquest the next morning at eight o'clock, and wished the family notified. Accordingly Mr. Newton went immediately up to Mr. Salisbury's, reaching there about seven o'clock. He asked Mrs. Salisbury if he could see the corpse, and was shown into the room. When he came out, he asked Mr. Salisbury if he could have the privilege of having her opened and examined. Mr. S. said it was of no use; that they were

satisfied what ailed her; that she died in a "spasmodic fit"; and that the funeral was appointed. But he finally consented to allow the examination and to delay the funeral one hour for it. Defendant came in just then, and said, "Newton, what are you going to have done?" Mr. N. told him that he was going to have the coroner there in the morning, and have her examined to see what ailed her. Defendant replied, "It sha'n't be done." Mr. N. said, "Daniel, it must be done." He replied, "It sha'n't be done; we will have the funeral as appointed." Mr. Newton said, "Daniel, a father before a father-in-law, and a father before a son-in-law, and it must and shall be done," and turned to ride away, when defendant said, "It sha'n't be done, now mind that."

The next morning, Wednesday, July 2d, defendant went early to the village. His wife's uncle saw him at the depot between six and seven o'clock. They entered into conversation, and defendant was asked if he knew the cause of her being so sick and dying so suddenly; and if she had not been taking medicine that caused it. He hesitated, and made no reply, until he was told that her family were going to have this thing looked into, when he said, "I don't know as there is any use in bluffing it off; she did take medicine, but she did not take it according to the doctor's orders." He then inquired who the coroner was, and who the jury were that were coming up there. After this he drove to the offices of Drs. Hyde and Goodyear and asked them to be present at the examination. He called at the County Clerk's office and asked if Dr. Gazlay was the coroner. Being questioned as to his wife's death, he said that she was taken with dizziness in the head, and then went into convulsions; that there was no poison about there that she could have got; that she was to have been buried at ten o'clock that forenoon, but Mr. Newton had been there, and had decided to hold an inquest; and that he opposed this examination because he knew that his father-in-law was a singular man, and if poison was found would lay it to him, while he was as innocent of it as the clerk himself. When Mr. Newton reached Mr. Salisbury's house at eight o'clock that morning, defendant had returned home. The coroner arrived about nine o'clock, accompanied by his brother-in-law, who was to assist him. No jury had as yet been summoned. The funeral exercises were proceeded with, and, at their close, the coroner took possession of the body. These two eclectics then commenced to make the post-mortem examination in the presence of twelve or fifteen persons who were in the room. The cutting was mainly done by Dr. Bolles, who opened the body, placed ligatures upon the orifices of the stomach, and removed it. On examining its exterior, a slit was found where it had been cut, which was large enough to admit the finger. Dr. B. called for a bowl, enlarged this opening, and without waiting to ascertain whether this bowl was clean, emptied the contents of the stomach into it. There was perhaps half a pint, containing bread, mixed with leaves resembling lettuce. Water was sent for, and these doctors proceeded coolly to rinse off the inside of the stomach, by dipping it entire in the pail of water and rubbing it with the hand, to see if they could discover arsenic, which Mr. Newton's family and the coroner supposed had been administered. The stomach was found entirely normal in its appearance, with the exception of a few patches, which were slightly congested. A tin wash dish being at hand, the stomach was thrown into it, without examining its cleanliness. Meanwhile a jury had been organized and now came in to view the corpse. Dr. Bolles showed it to them and stated that he saw no

evidence of arsenic in the stomach. They then retired to another room and Dr. B. commenced sewing up the body. This finished, he washed his hands, and went into the jury room. Here he remained five minutes, at least, leaving the two bowls in the room with the corpse. The one containing the stomach was on the floor, the other containing its contents was on a table, not far from an open window. The foreman of the jury questioned the propriety of leaving the stomach and contents where they were so easily accessible, and requested Dr. B. to bring them into the jury room. The dishes were found apparently as they were left. They were brought into the jury room, where they remained until the close of the day's examination. After placing them under the eye of the coroner, Dr. Bolles went down to the village, and obtained two self-sealing jars, closing air tight by a band of India rubber. These he took up to the house, and, after the adjournment, he and the coroner placed the stomach in one and its contents in the other. These jars were then taken by them down to Dr. Bolles' house and given by the coroner to the hired girl, who put them in the cellar. During the autopsy Drs. Hyde and Goodyear called, but told Mr. Salisbury they would not stay, as they had not been summoned.

The coroner's jury had been organized about noon. The first witness examined was Mr. Salisbury, who gave the facts as already narrated. Defendant was then called, who made a similar statement, adding that when he went to his room to retire, his wife complained of dizziness, so that she could not sit up; and that he told her perhaps she would get over it if she would lie quiet. One of the jurors then said that strychnine had been round the house. Consequently, the defendant was asked if he had any poison. He replied that he had purchased strychnine in planting time to soak corn in; that it was never used; and, that he buried it about the time the corn was coming up, where no one but himself knew of it, or could get it. Some one then asked him where it was. He said he would produce it if necessary. The foreman suggesting that it would be well to have it, he started to get it, accompanied by three of the jury. He went from the jury room, which was where his wife died, through the dining room into the kitchen, then into the wood-house and out of the east door to the hog-house, six or eight rods away. While on the way he said that he kept the strychnine in his pants pocket one night after he had it labelled, and then he buried it, because his father said it was dangerous to have in the house. When they reached the hog-house, defendant commenced looking about, saying he had put it in a hole in the ground. He then took up a flat stone and commenced digging. When he had made six or eight strokes, the stone was heard to strike the bottle. One of the jury noticed it on the edge of the hole, opposite to defendant, and rolling down into the cavity toward him. It seemed to have come from a clump of weeds on the border of the cavity. Defendant still continuing to dig, another of the jurors told him to take care or he would break the vial. The one who had first seen it then reached over and picked up the bottle, when defendant said, "What has become of the label? There was a label on it when I buried it." The bottle had dirt on it as if mud had been spattered on by the rain of the previous night and dried. It was easily brushed off, and the vial was then taken into the house and given to the foreman of the jury, who handed it to the coroner.

After the jury had left the house, Orlando's wife picked up on the step as she was coming in at the west door, a label having a skull and cross

bones in the centre, the word "strychnine" at the top, and "poison" on each side. She went into the dining room and handed it to her husband. He took it, and, after examining it, threw it on the floor. A day or two after this, Esther found it in the dirt as she was sweeping the dining room. She showed it to her mother, and by her direction threw it into the fire.

The next morning, Thursday, the coroner, Dr. Gazlay, called at Dr. Bolles's house for the jar containing the stomach. The hired girl went to the cellar, and found both in the same position in which she placed them. The one containing the stomach was brought up, and given to the coroner. He called for some spirits; whiskey was handed him, with which he filled the jar. He then took it up to Mr. Salisbury's, to the inquest. Dr. Frederick Hyde, Professor of Surgery in the Geneva Medical College, who was the family physician, had been summoned, at the instance of the jury, to make an examination of the brain. He arrived at the house soon after the coroner. Three other regular physicians of the place accompanied him. After the examination of one or two witnesses, Dr. Hyde, assisted by one of his colleagues, proceeded to their investigation. The skullcap was removed and the dura mater reflected. The brain appeared normal, though its vessels were somewhat congested. It was gradually sliced away, without observing anything of importance until the ventricles were reached. One of these, the left, was filled with a bloody serum, in quantity about an ounce and a half: the right contained less, hardly more than the normal quantity. When they came to the base of the brain, considerable congestion was noticed there and about the spinal cord, and so much serum that, as Dr. Hyde testified, the cerebellum seemed to be floating in it. At the conclusion of Dr. Hyde's testimony, the jury adjourned until they should be called together by the coroner. Several times during these examinations, defendant said to Dr. Bolles, "Have you not got most through with that body, so we can bury it?" Mr. Newton had reached Mr. Salisbury's about 8 o'clock that morning. Defendant met him at the door and said, "What about that strychnine?" Mr. N. said, "Daniel, I don't know yet." The same afternoon defendant said to him, "Newton, have you seen where they found the strychnine?" Mr. N. said "No," when defendant said, "I will go and show you." He went to the hog-house and pointed out the hole from which the vial had been taken. He then said that they had a cosset lamb, and that deceased might have been out with it and found the strychnine, and taken it herself before she went to bed. Mr. N. replied that would have been impossible. Defendant said, "What will they do with me, Newton, if they find this strychnine in her stomach?" "That depends on the testimony we can produce," replied Mr. Newton.

After the adjournment of the jury, Coroner Gazlay took the jar containing the stomach down to Dr. Bolles's house. He called for the other jar, wrapped them both up, one in wrapping the other in newspaper, tied them with twine, and took them to his house in Homer. There he placed them in his cellar, on a box of sand, covering them over with an old cheese box. Here they remained until the next Wednesday, the ninth of July, when they were taken by Dr. Gazlay over to Manlius, Onondaga County, and given to Dr. Wm. Manlius Smith for analysis. The facts were briefly narrated to him, and the jars, which were left in his possession, were placed under lock and key. The next morning a small portion, about half an ounce, of the contents of the stomach, which was found to be very acid,

was examined with a view to the detection of strychnia. One-third of the solution which was obtained from this small quantity gave unequivocal evidence of the presence of this alkaloid. This solution left an exceedingly bitter taste in the mouth, lasting for half an hour. A few days after this, another portion of the contents of the stomach was examined by a different process, but with the same result. Strychnia was certainly detected. Deeming it of much importance that a careful examination should be made of the other organs of the body, particularly as the stomach and its contents had been so carelessly protected from outside interference, Dr. Smith suggested to the coroner the examination of the body. On Thursday, the 17th of July, this examination took place in presence of the jury, the examination being conducted by Dr. Smith. The body was still quite rigid, and the limbs stiff. The heart was entirely empty, with not a trace of blood about it. The bladder was also entirely empty. The uterus was of its natural size, and contained nothing. Dr. Smith removed a portion of the œsophagus, duodenum, and liver, with the heart, and about four fluid-ounces of bloody serum from the cavity of the chest. These he placed in clean jars, and retained in his possession until he reached home. After the body had been reinterred, Dr. Smith gave his evidence as to the existence of strychnia to the jury. They then retired, and rendered a verdict "that the said Frances E. Salisbury came to her death by poison; * * * that the poison was strychnine, the same being swallowed; and that the testimony and circumstances of the case point very strong to Daniel Salisbury, the husband of the deceased, as the guilty person."

In consequence of this verdict, Daniel E. Salisbury was arrested and taken before the justice, where an examination was had, lasting four days, and he was committed to await the action of the grand jury. He was indicted October 15th, 1862, and the case was called at a Court of Oyer and Terminer January 5th, 1863. The prisoner was arraigned, pleaded not guilty, and demanded a trial. As the defence was not prepared to try the case, the judge granted a postponement to the next term.

When Dr. Smith arrived home with the parts he had removed from the body, he set about making the final analysis. He had obtained from the coroner the vial found near the hog-house, the contents of which the defendant had purchased for strychnia. The processes followed in this analysis Dr. Smith has kindly furnished me, and I am therefore enabled to give them in his own words.

"*Method of Analysis.*—As a preliminary experiment, about a tablespoonful of the contents of the stomach was placed on a small filter. The filtrate, which had a marked acid reaction, was neutralized with a little potassa, and then shaken with some chloroform. After subsidence, a portion of the chloroform was removed with a pipette, and evaporated on a white porcelain slab. The residue from the evaporation of the chloroform was tested with sulphuric acid and bichromate of potassa, and yielded an intense and beautiful blue coloration, passing through purple into red. Another small portion of the chloroform, on evaporation, gave a residue having a decidedly bitter taste, which remained perceptible about half an hour.

"Subsequently, the remainder of the contents of the stomach was placed in a small dialyser of parchment paper, supported by a gutta-percha rim, and floated on the surface of about two quarts of rain water, in a glass jar about six inches deep. After the lapse of three days, the diffusate was evaporated in a porcelain capsule over a water bath. Meanwhile, the dialyser was placed on the surface of a fresh quantity of water. This, after the lapse of two or three days, was added to the residue of the previous evaporation, and reduced to a

small bulk, about four fluidounces. The concentrated liquid was neutralized with ammonia, shaken with about an ounce of chloroform in successive portions, the chloroform evaporated, and the residue tested. It gave the proper colours of strychnia; and in their due order, when treated with sulphuric acid and bichromate of potassa, or peroxide of lead, or peroxide of manganese. A portion of colouring matter that obstinately adhered to this residue prevented, apparently, the production of good crystalline forms for inspection under the microscope. For the same reason, the weight of the strychnia obtained from the contents of the stomach was not determined.

"From the stomach itself, treated in the main as hereafter described for other portions of the body—but several months after it came into my possession—slight traces of strychnia were thought to be indicated by the colour tests, but so undecidedly as not to be considered of any weight.

"The general plan of operating on the blood, œsophagus, duodenum, and heart, was to digest them with dilute chlorohydric—in some cases dilute acetic—acid, in a covered glass vessel, in a water bath, for several hours, till the tissues were a good deal disintegrated. The resulting pulp was then placed on a filter, and, after draining, washed with water. The filtrate was concentrated, its acidity neutralized with ammonia or potassa, and chloroform agitated with it. The residue from the evaporation of the chloroform gave no decisive response to the colour tests for strychnia. These residues were, however, considerably coloured, nor did I succeed in satisfactorily ridding them of the colour. The plan recommended by some experimenters of heating gently the residues in contact with a small quantity of sulphuric acid to char the colouring matter, &c., did not succeed in my hands in disposing of the colouring matter.

"With the liver a somewhat different course was pursued. Already considerably softened by decomposition, it was cut up as finely as possible with scissors, and digested with dilute chlorohydric acid in a glass vessel, in a water bath at near the boiling temperature, during the daytime for several days. The pulpy mass resulting remained four or five months longer in the jar, before further operations were commenced on it. It was then transferred to a dialyser of parchment paper, and dialysis made with about two gallons of water, in two successive operations, each of about three days. The mixed diffusates were evaporated to near dryness on a water bath. The residue was treated with strong alcohol, which left behind a considerable quantity of chloride of ammonium, and but little else apparently. The residue from the evaporation of the alcohol was treated with successive small portions of water, till nothing more was taken up. The watery solutions were mixed, evaporated to the bulk of half a pint, and, after neutralization, shaken with an ounce of chloroform. The chloroform did not separate well, but formed a persistent emulsion. Several ounces of ether were then added, and, after agitation and repose, poured off and evaporated by a gentle heat. The residue was coloured highly of a yellowish-brown hue. A portion of it, treated with sulphuric acid and bichromate of potassa, gave a change of colour, but so masked by the brown colouring matter present as to give no satisfactory indications. The residue had a bitter, mixed with a nauseous fatty taste. Some very dilute acetic acid was now added to the residue from the ether, and left, after proper agitation, a considerable amount of a brownish greasy substance adhering to the sides of the capsule. The acetic solution was neutralized and treated with ether, and the process repeated several times. At length a solution was obtained which, when neutralized and shaken with chloroform, gave on evaporation of the chloroform a residue not much coloured, which, treated with sulphuric acid containing a small amount of bichromate of potassa, gave a distinct though faint purple coloration, passing into equally distinct though faint red. A friend was called upon to observe some of these tests, and, without being told what colours were expected, named them as above, purplish passing into red.

"It should be said that after each repetition of evaporating the ether, as before mentioned, a portion of the residue was tested with the sulphuric acid and bichromate of potassa. A change of colour was produced in every case. At first, its character was obscured by the brown colouring matter from the

tissues; but at each successive evaporation, as this brown matter became less, the character of the colours became less and less obscure, till, on the evaporation of the final chloroform solution, there was no hesitancy in deciding as to the shades of colour produced and their changes.

"That the colours obtained in the experiments with the liver were due to the presence of minute portions of strychnia, and not to colouring matter derived from the tissues, may be inferred from the fact that they became more and more distinct as the colouring matter was more and more eliminated by the repetition of the evaporating processes.

"I believe none of the final residue was tested, it being all consumed in the colour testings." (Signed) WM. MANLIUS SMITH.

I received the summons to attend the trial on the 6th of June. I was then lecturing at the Albany Medical College, and on Friday, the twelfth, left Albany for Syracuse. The next day, Saturday, I went over to Manlius, visited Dr. Smith's laboratory, and, with a residue which he stated was obtained from the contents of the stomach, confirmed his opinion of the presence of strychnia, both from the colour tests and the exceedingly bitter taste. I observed traces of a crystalline character, but the form could not be determined. As a further confirmation of the evidence, we agreed to try the physiological test of Dr. Marshall Hall. Three active frogs, of equal size, were procured. To the first was given a solution of nux vomica, computed to contain one-twentieth of a grain of strychnia. This was injected into the cavity of the abdomen, the frog placed in a dish of water and watched. The main purpose of this experiment was to ascertain exactly the action of this alkaloid, and thus to get control of the phenomena. In twelve or fifteen minutes, the frog became convulsed, the spasm being quite energetic. In a few minutes more, he lost all power over the lower limbs, and they remained extended. To a second frog, a third of the solution obtained by dissolving the residue from the contents of the stomach in water containing a little acetic acid, was given by injection, and the time noted. In eight minutes the spasms came on, the convulsions being much more severe than in the case of the first frog. In twelve minutes he turned over on his back, and was dead in three-quarters of an hour. An acetic solution of one-twentieth of a grain of the white powder found in the vial on the prisoner was prepared, and injected, as in the other cases, into the third frog. He became tetanized in nearly the same time with the last, and expired in about forty-five minutes. The first frog did not die, but recovered. From these experiments, it was conjectured by Dr. Smith, though roughly, it must be confessed, that the strychnia which remained from previous colour testings, at the commencement of the physiological experiments, was at least one-tenth of a grain. Thus there seemed not only no doubt of the presence of strychnia, but even its quantity was estimated.

On Monday, June 15th, the trial commenced at Cortlandville. The case was called at two o'clock in the afternoon, and the rest of the day was consumed in empanelling the jury. The counsel for the government were Geo. B. Jones, Esq., District Attorney, Hon. Chas. Andrews, of Syracuse, and Milo Goodrich, Esq., of Dryden. M. M. Waters and F. D. Wright, Esqrs., of Cortland, appeared for the defence. The trial occupied the entire week. From the evidence there produced, we have gathered the facts given in the preceding statement. The counsel for the prosecution offered no theory, but sought to prove that defendant and his wife did not live happily together; that he had purchased strychnia, but did not use it

for the purpose intended; that this alkaloid was administered to the deceased by the defendant; that the chemical evidence was conclusive as to its existence in the body; and that it was taken during life, as the symptoms, being those of tetanus by strychnia, abundantly established. On the other hand, the defence, as well by their evidence as by their argument, endeavoured to show that the symptoms were such as might have been caused by an inflammation of the brain; that, while strychnia might have been found in the body, that was no evidence that it was taken during life: it might have been placed there by design after death, there having been abundant opportunity; and that, should it be considered as proved that it was taken before death, there was evidence to show that it was taken for purposes of suicide. The presiding justice, Hon. Chas. Mason, said, in his charge to the jury: "I need not say to you, gentlemen, that from the evidence in this case there can be no doubt at all but that strychnine was discovered in the contents of this stomach after it passed into the hands of Dr. Smith; and there is probably very little doubt, indeed, but that he discovered satisfactory evidence of the presence of strychnine in his analysis of a portion of the liver. When you come to this branch of the case, gentlemen, you are resting upon evidence that never lies. These chemical tests are never mistaken. They do not have the uncertainties about them which much of the evidence which is brought before our judicial tribunals have; for, in regard to the questions which are here tried, the most to which we can ever attain is a reasonable moral certainty. But in regard to the experiments of chemists, probability is excluded from the investigation. The ascertainment of positive certainties is its result. That the analysis of the contents of this stomach, and of portions of the liver, disclosed the fact that there was strychnine found in this body after death is, therefore, beyond doubt. Did the subsequent investigations, in relation to the contents of this stomach and other portions of the body, exclude every possible chance of its having got there after death, we might say that the proposition that this woman died of strychnine was about as well established as evidence could ever establish any fact in a court of justice." After the charge, the case was given to the jury, and they retired. In an hour and a half they came into the court-room and returned a verdict of "Guilty." The prisoner, who had manifested entire indifference throughout the trial, did not seem to be awakened to any sense of feeling by this verdict. On the next Monday, Judge Mason pronounced the sentence of the law upon him: "That you, Daniel Salisbury, be hung by the neck on Friday, the 14th day of August next, between the hours of 10 and 2 o'clock, until you are dead, and may God have mercy on your soul."

The counsel for the prisoner made strenuous exertions to procure a commutation of the sentence of the court. A petition to Governor Seymour, signed by the judge, ten of the jurors, and many of the citizens—urging this on the ground of the weak mental capacity of the prisoner—was prepared and forwarded to the Executive. The sentence was accordingly commuted to imprisonment for life. As early as the 19th of July, however, the prisoner, believing that his time to live was rapidly shortening, made a confession of his guilt to the Rev. Mr. Simmons, pastor of the Baptist Church, where his father attended. Subsequently he made another and more full confession to the sheriff of the county. It is as follows:—"Daniel Salisbury says that three or four days previous to the death of his wife, he took a large powder of strychnine out of the vial and put it into

his vest pocket; that on the night of his wife's death, he went into the bedroom to go to bed. She had already gone to bed. He said to her, at the same time laying the powder on the stand, 'Frank, here is some more medicine for you.' She had been taking medicine with a view to produce an abortion, as he had led her to believe herself *enceinte*. He gave her the powder, and at the same time handed her a teaspoon. She put the powder into the teaspoon. He then gave her a cup of water. She took the powder into her mouth dry; at the same time, or immediately after, she drank the water. He then undressed himself to go to bed. She said, 'O Daniel, what awful bitter stuff this is.' As soon as he got into bed it took effect, and she went into convulsions. He was alarmed, greatly excited, and says he would have given all the world if he had not given the strychnine. He has little recollection of what he did afterward, but says it could not have been more than two or three minutes after she took the poison before she went into the first spasm. He says that the only motive he had for getting rid of his wife was, that he did not want to live with her." We cannot believe that Gov. Seymour would have commuted the sentence had he been aware of this heartless confession. Nor can we believe that the prisoner would have made the confession had the commutation of his sentence preceded it. We must, therefore, conclude that the confession was unknown to Governor Seymour when the application was granted.

In reviewing this important trial, we notice several points of great interest to the medical jurist. And first, the time which elapsed after the poison was taken before it produced its effects, was very brief. On the coroner's inquest, Mr. Salisbury and his wife both testified that it was ten minutes after the defendant went to his room before they heard the scream. It being important to note the time more accurately, the father, in presence of the defendant's counsel, who held the watch, repeated the exact operations of that night. Read the letter, handed it to his wife, took off his boots and stockings, filled his pipe, lighted it, took a few puffs, received the letter again from his wife, and read the first line. This repeated several times, with as great accuracy as possible, gave from 2 min. 50 sec. to 3 min. 8 sec. as the actual time intervening between the time when the defendant went to his room, and that when the scream was heard. To this length of time, therefore, Mr. Salisbury testified on the trial. It is corroborated by the testimony of the hired man. He stated that on the night referred to, the prisoner and himself took off their boots together in the kitchen, and then went into the dining-room; he went up stairs, took off his overalls and vest, stripped down the bedclothes, and had just got into bed, when he heard the scream. He judged the time to be not more than three or four minutes. To the same tenor is the confession of the prisoner. When we remember how slight is the dress of a labouring man in summer, especially on a farm, it must appear that the time spent by Daniel in preparing for bed could not have exceeded two minutes. He, himself, says it was not over three. If this be so, and there seems to be no good reason to question it, then we have in this case the shortest time on record for the operation

of strychnia; at least in any authority I have been able to consult. The shortest case mentioned by Dr. Taylor is that of Dr. Warner, where the spasms came on in five minutes.

With regard to the character of the symptoms, the evidence is very clear. The deceased was in spasms when the father entered; her muscles were rigid, and twitched under his hands when he attempted to raise her; her body was stiff, her head was thrown back, her breathing was very hard, and she had violent cramps in the abdomen. There would seem to be no doubt that these spasms were tonic, and that they resulted from tetanus. Yet medical men were found to testify, on the part of the defence, that "there was nothing in these symptoms decidedly characteristic of poisoning by strychnine." But had inflammation of the brain set in, as the defence claimed, it would undoubtedly have been preceded by severe pain, such as could not fail to attract the attention of the family. So far from this, however, deceased had only a slight headache the day of her death; such an one as she was subject to not unfrequently. Nor did she complain particularly of her head while in the spasms. Moreover, in convulsions from disease of the brain, the spasms are clonic in their character. But the evidence mainly relied on to establish inflammation of the brain depended on its post-mortem appearances. "From the appearance of the brain, I should judge that death was caused in this case by inflammation of the brain, such as convulsions," said Dr. Hyde. These appearances were—serum in the left ventricle, rather more than normal in quantity; considerable congestion at the base of the brain, and some effused serum; and, what was considered of more importance, Dr. Hyde testified that he found *slight* depositions of lymph on the superior portions of the brain; he could not be positive that he saw any depositions of lymph at the base of the brain; but his impression was that he did find them. So far as the first part of these evidences is concerned, we may be sure that the effect was mistaken for the cause: for Dr. Taylor says, "Among the *internal* appearances (of strychnia poisoning) are congestion of the membranes and substance of the brain, as also of the upper part of the spinal marrow."[1] In a case mentioned on the same page, "the upper part of the spinal marrow was very red superficially, and the canal appeared to be full of serum." Again, he says, "Of the appearances produced in poisoning by strychnia * * * * congestion of the membranes of the brain and spinal marrow is probably the most common."[2] So far as the deposition of lymph is concerned, the three other physicians who assisted at the autopsy, testified that they did not see this lymph, though their attention was called to it. We must then conclude that there was no such indication. But were all other evidence wanting, that derived from the perfect consciousness of the deceased,

[1] Treatise on Poisons, Am. ed., p. 685. [2] Ibid., p. 686.

is abundantly sufficient to show that the cause of death was not convulsions occasioned by brain disease. When the mother entered the room, deceased spoke to her; she afterwards tried to reply to Mr. Salisbury, showing that she understood his question; even during the last spasm, she looked up at a friend who came in and, by her eyes at least, seemed to recognize her. In convulsions, on the contrary, where the brain is so seriously affected, we have delirium and raving, or entire unconsciousness and coma. Tetanic spasm is the only spasm admissible on the evidence. That this tetanus did not arise from idiopathic or traumatic causes, we need not stop to prove, as this question was not raised by the defence. The rapid accession and conclusion of the symptoms precluded any such supposition.

The careless manner in which the organs removed from the body for the purposes of analysis were protected from outside interference deserves the severest reprobation; and no less does the unheard-of proceeding of the operator, in washing the stomach in a pail of water, rubbing the mucous surface with his hand, to see if he could detect arsenic, and then placing the stomach and its contents in bowls which were not even examined as to their cleanliness. In consequence of this carelessness, had it not been for Dr. Smith's forethought in disinterring the body and removing other portions of it for analysis, serious doubts might have been thrown on the prisoner's guilt, and thus the course of justice have been frustrated.

The exact amount of strychnia administered in this case is not known. The amount purchased was probably between 18 and 19 grains. The amount in the vial when given to Dr. Smith was between 12 and 13 grains. No evidence was introduced to show that defendant used any for any other purpose. We must conclude, therefore, that he gave deceased not far from six grains. Death ensued in thirty minutes.

In the analysis, strychnia was suspected from the fact that some of this alkaloid had been purchased by the defendant; and in a single half ounce of the contents of the stomach, Dr. Smith was able to detect it. The evidence which he obtained in the final analysis, confirmed as it was by my own observations, leaves no reasonable doubt of its existence there, and, therefore, of the possibility of detecting it while yet unabsorbed. But there was quite as certain evidence of the existence of strychnia in the liver, though, of course, the quantity was much smaller. The colours were faint, but *distinct*. Hence we may conclude that strychnia is absorbed in quantity sufficient to be readily detected by chemical means. The methods employed are not open to the slightest objection. Dialysis; the method of Graham, and afterwards separation by chloroform, as proposed by Rogers and Girdwood, leave nothing to be desired. Hence we cannot agree with Dr. Taylor, when he says: "Strychnia is one of the alkaloids which in some cases is either speedily eliminated, or, if deposited in the tissues, is so altered in its nature, or diffused in so small a quantity, that the most

refined chemical processes at present known cannot separate it."[1] And again he says that, up to May, 1856, "in no one instance had strychnia been obtained from the tissues of a person poisoned by it, and in the greater number of instances it had not even been found in the stomach in an unabsorbed state."[2] "No chemist has yet succeeded in separating the alkaloid strychnia in an absorbed state from the blood, tissues, or soft organs of the body."[3] In consequence of which, he concludes that, "although it may be detected in the stomach (if carefully preserved), it cannot be detected in the absorbed state in the blood and tissues."[4]

On the 17th of March, 1864, I received a letter from Dr. Smith, in which he says: "I inclose in this a small package in which are two fragments of porcelain, on each of which is a residue from the evaporation of some chloroform that had been shaken up with the preparation of the liver from Mrs. Salisbury." He describes the preparation of these specimens as follows: "The experiments already mentioned were finished in the winter of 1862–3. The pulpy mass from the liver remained undisturbed in the dialyser, with no water beneath, till June, 1863. It was then found moist, but not at all mouldy, and not particularly disagreeable in odour. It was removed from the dialyser, and, after being thinned with water, was placed in a glass funnel, the throat of which was obstructed by a mass of flax fibres. The liquid very slowly passed through. Occasionally fresh portions of water were added to the contents of the funnel, and after several weeks about a pint of brownish liquid had collected in the bottle beneath. The whole remained in the same situation till the setting in of winter, at which time the liquid had been reduced by spontaneous evaporation to a little over four fluidounces. About the last of February, 1864, this liquid was neutralized with ammonia, shaken with chloroform, the chloroform evaporated, the residue treated with acidulated water, again neutralized, and shaken with chloroform. A repetition or two of this process gave a residue showing clearly the purplish colour passing into red, when treated with the appropriate reagents. It had also a slight, though plainly perceptible, bitter taste." On testing the residues which Dr. Smith sent me, I obtained very distinct colorations, purple passing into red; confirming his statement that strychnia existed in the liver. In view of these facts, Dr. S. goes on to say: "If there is no mistake, this experiment settles the fact that liver, removed from a body poisoned with strychnia, after a fortnight's burial, in hot weather, and left a week or two more in a jar, then cut up and treated with chlorohydric acid and water in a water-bath, left standing three or four months in a jar, then placed in a dialyser over five quarts of water for three days, and then over five quarts of fresh water for another two days, still may retain enough strychnia to give the appropriate colours with

[1] Treatise on Poisons, p. 77. [2] Ibid., p. 75. [3] Ibid., p. 74. [4] Ibid., p. 695.

sulphuric acid and bichromate of potassa." Two points of considerable interest are established by this statement: First, that strychnia resists in a good degree the putrefactive and other changes of the tissue in which it is stored; and second, that the process of dialysing does not fully separate strychnia from the disintegrated tissues of the body; for quite as decided, and Dr. Smith thinks more decided, traces of strychnia were obtained from the pulpy mass of disorganized liver from the dialyser than were obtained from the diffusate. If this latter point shall be proved true for other poisons, this process cannot be relied upon to discover them when very small in quantity.

In closing the report of this trial, I may safely reiterate the statement with which I commenced, that "there are special features in it of great value to the toxicologist." It is complete. The circumstances were very fully elicited, the symptoms very carefully noticed, the *post-mortem* appearances completely described; the circumstantial evidence was therefore very strong. And, to crown all, the confession of the prisoner afforded a means of verifying our suppositions, a privilege not often permitted. It is from this completeness that this trial will be valuable to the medical man who has such cases to investigate. If it shall assist in the conviction of but a single felon, the time and labour expended in the preparation of this report will be abundantly rewarded.

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## ART. VII.—*Oil of Aniseed as a Deodorizer of Tersulphide of Potassium.*

By W. S. W. RUSCHENBERGER, U. S. Navy.

A WISH to use a solution of sulphuret of potassa as a lotion to a lady's skin led me to seek means to overcome or neutralize the odour of the preparation. Among other substances, I tested to a limited extent the deodorizing properties of the permanganate of potassa. For the purpose I prepared a solution of the salt, from the manufactory of Mr. Morson, London, in the proportion of two parts to one thousand of distilled water by weight.

This solution was added to peppermint-water, to camphor-water, to a ten-grain solution of tersulphide of potassium, and to spirits of turpentine, in the proportion of about one part to two. There was no perceptible change of odour in either case, even after exposure to the air during twenty-four hours. The beautiful magenta colour of the permanganate solution was wholly discharged in the mint-water, with a flocculent, light brown precipitate; in the turpentine, with a dark brown precipitate; and in the sulphuret solution, without precipitate. In the camphor-water the colour

remained unchanged, but there was a very slight brown precipitate after standing twenty-four hours.

To the mint-water, camphor-water, and solution of tersulphide of potassium the solution of permanganate was added in excess. After exposure to the air during twenty-four hours, the characteristic odour of each article still adhered to it.

Recollecting that when I was engaged in anatomical studies, many years ago, I removed the cadaveric odour from my hands by washing them with camphorated tincture of opium, more expeditiously than by any other material then known to me, I added to a solution of tersulphide of potassium (sulphuret of potassa), ten grains to a fluidounce of distilled water, twenty drops of opii tinctura camphorata. A very feeble but totally different odour remained; its offensiveness had disappeared, and the lotion was used without provoking any remark about its smell.

Which one of the constituents of the paregoric is the deodorizing agent? A solution of benzoic acid added to a solution of the tersulphide caused a white precipitate; the tersulphide was decomposed, and the offensive odour was intensified.

About a fluidrachm of anise-water (prepared after the manner of preparing camphor-water) was added to an ounce of the ten-grain solution of the tersulphide of potassium, and the odour instantly changed its character, and was no longer offensive. A like effect followed the addition of a single drop of the oil of anise to two ounces of the same solution. No perceptible chemical change occurred in the solution.

A single drop of oil of anise was rubbed with a drachm of lard, and then five grains of tersulphide of potassium in fine powder were thoroughly mixed with it, to form an ointment, which was without offensive odour.

The oil of anise employed in these experiments was more than two years old.

Is the phenomenon just mentioned due in any manner to the quality possessed by the vapour of the oil of aniseed to intercept radiant heat? Professor Tyndall, in his recent work, *Heat considered as a Mode of Motion* (New York edition, p. 374), states that, regarding dry air at the tension of one atmosphere as unity, the absorbent power of the vapour of the oil of aniseed in intercepting radiant heat is represented at 372, which is greater than that of any other essential oil mentioned by him in this connection.

Whether this is to be regarded as an instance of catalysis, and the presence of the oil simply arrests the evolution of hyposulphuric acid, is a question to be determined. Chemists may or may not regard these suggestions worthy of consideration. I cannot attempt to account for the phenomenon.

NAVY YARD, BOSTON, MASS., April 2, 1864.

ART. VIII.—*Inquiry into the Correctness of the Belief that Prof. Bibron was the Inventor of the Antidote which bears his Name.* By S. WEIR MITCHELL, M. D.

WHILE I was engaged in studying rattlesnake venom and the supposed antidotes, Doctor, now Surgeon-General, Hammond called my attention to the remedy known as Bibron's antidote.

Somewhat later I was struck with the strange way in which a knowledge of this famous remedy reached the physicians of this country. Accordingly, I took some pains to trace up the subject beyond the printed authorities. The result was so singular, so unlooked for, that I hesitated to speak publicly until I had traced the matter to its first source. Unfortunately a link has been lost by the death of Prince Paul of Wurtemberg, and I now publish so much of this extraordinary history as I have been able to unravel. I hope that my statement may attract notice from some one who will be able to supply what is wanting. I believe that the story of Bibron's antidote, as I shall now relate it, is one of the most singular in the annals of medicine.

The first notice in print of Bibron's antidote is the following:—

"*Experiments with Bibron's Antidote to the Poison of the Rattlesnake.* By Wm. A. Hammond, M. D., Assist. Surg. U. S. A.—Some four years ago, Prince Paul of Wurtemberg, the celebrated naturalist, communicated to my friend Mr. De Vesey the results of some experiments performed before the French Academy of Sciences by Prof. Bibron, relative to an antidote to the poison of the rattlesnake. According to Prince Paul, Prof. Bibron allowed a rattlesnake to bite him in the lips and cheeks, etc., and, by taking the antidote discovered by him, prevented all alarming symptoms, and, in fact, suffered no inconvenience therefrom."—*Am. Journ. Med. Sci.*, Jan. 1858.

The formula and mode of use are then stated.

Dr. Hammond, after some experience, formed a favourable opinion of the antidote. His great authority at once introduced it to the profession, and several short papers, by Dr. Coolidge and others, detailing successful cases, were made public.

I myself experimented with it (see Smithsonian essay *On Venom of Rattlesnake*, and also *North Am. Med.-Chir. Rev.*, March, 1861, "On the Treatment of Rattlesnake-Bites, by S. Weir Mitchell, M. D., etc."), but did not form so indulgent a view of its value. During the interval, the remedy was placed on the supply table of the U. S. army.

A year ago, Mr. De Vesey (Xantus) promised me the letter in which Prince Paul informed him of the antidote and its inventor. This letter I received a month ago. It runs as follows, literally translated:—

"Dr. Bibron, in Paris, has invented a most excellent remedy for snake-bites, with which he made several experiments. Among others, in the Palais Royal, before a large audience, he caused himself to be bitten in the lips and throat by the great crotalus horridus, and cured it immediately. Also, I made several

experiments on dogs and cats. Will you not also try some, and have the kindness to communicate your results? The recipe is as follows: Iodide of potassium gr. iv; corrosive chloride of mercury gr. ij; dissolve in bromine ʒv. Dose, ten drops. Repeat if needed."

This letter dates back to 1853 or 1854. It is the first mention of the antidote in any form. Recently I addressed a letter to M. Aug. Dumeril, Museum of the Garden of Plants, Paris, the son of Bibron's colabourer, Prof. Dumeril, and himself a distinguished observer. In this letter I asked for information as to Dr. Bibron in connection with the antidote. I received a very courteous reply, of which I give below a translation.

"MUSEUM OF NATURAL HISTORY, PARIS, June 14, 1864.

[After alluding to a former letter, which has been lost, M. Dumeril says:—]

"I have still to repeat that, although I knew Bibron intimately, I never heard him mention the antidote. Neither have I ever heard my father, either in conversation or in lectures, allude to an invention which, were it real, would be well known in France, whilst, in fact, no one knows anything about it. In the museum records it is also unknown, nor in his family is there any trace of this matter, which appears to have been so widely known in America, where, no doubt, his name has lent increased fame to the antidote. This supposition, which you yourself made in a former letter, seems to me very probable. In the same letter you asked me to write concerning the matter to Prince Paul. This I did, in a letter of March 7, 1862, thus addressed: 'A Son Alt. Roy. Monseigneur le Duc Paul Guillaume de Wurtemberg, au Palais de Mergentheim (Wurtemberg).' This letter came back to me with the statement that the Prince was dead."

In speaking of the details given by the Prince in his note to Mr. De Vesey (Xantus), he adds:—

"Bibron never lectured at the Garden of Plants. He gave a course of general natural history to young lads in a school (Ecole Turgot), and certainly it was not before such an audience that he would be likely to exhibit this sort of juggling.

"Permit me to add that it is almost a calumny against a character so frank and loyal as that of this distinguished man, to suppose him capable of possessing the knowledge of so precious a remedy without hastening to make known its composition to the public through some scientific journal. MM. Milne Edwards and Flor. Prevost, connected with this museum for fifty years at least, are absolutely ignorant as to the antidote. On no occasion have they ever heard Bibron speak of it.

"You are welcome to make such use of this strong negative evidence as seems best to you."

The writer of the above speaks of his evidence as negative, but this hardly describes the full force of the statements which he has collected. Certainly, if Dr. Bibron had been the inventor of the antidote which bears his name, the fact would have been known to Milne Edwards and to the family of the deceased naturalist. Nowhere in the world would such suicidal experiments as he is said to have made have been less likely to be concealed than in Paris, and nowhere else would they have been so sure to attract the largest public notice. It appears to me therefore impossible that Bibron could have been the inventor of the remedy in question. Who, then, was the rightful father? Not Prince Paul, one would suppose, or

else, supposing it valuable, he would have asserted his rights, soon or late, unless we conceive that he devised the antidote and did not desire to claim its paternity, which appears scarcely a plausible view. To imagine this would be, moreover, to affix a stigma to one whose career gives us no right to make such a supposition, and who is now beyond the power to answer an unjust reproach. And here all possible hypothesis ends. Bibron is said by Prince Paul to have invented the antidote. Both are dead, and we have shown that the former has no claim to the doubtful honour. We leave the question, therefore, to the ingenuity of others, in the hope that this curious piece of medical history may find in the future some more satisfactory conclusion.

Since writing the above, I have received a letter on the subject from Prof. D. Brainard, of Chicago. The following extracts will prove of interest. Prof. Brainard says:—

"In December, 1853, I presented a paper to the Academy of Sciences (Paris) on the use of iodine in snake-bite. Not having the serpents, I could not repeat the experiments, and consequently got no report. I then used the iodine with woorara as an antidote to that poison, and submitted an additional report. Magendie, the chairman of the commission on this subject, dying, there was no report upon it.

"M. Reynoso then took up the subject, and stated that bromine was a more perfect antidote to the woorara than iodine. On his paper M. Flourens made a report in 1855, in which my experiments are correctly reported. . . . . Bibron probably saw my experiments. . . . . Bibron's antidote came probably from my experiments and Reynoso's paper. Who put in corrosive sublimate, I do not know."

This new phase of the matter requires some brief comment. We have made it clear that Bibron may be left out of the case. He had nothing to do with the antidote. Is it possible that Prince Paul could have confused Prof. Brainard with Dr. Bibron? It does not appear probable, because, to learn anything about the connection of bromine with the matter, he must have read Reynoso's paper, or Flouren's report on it, and in these Prof. Brainard's name is distinctly and repeatedly used, but not in relation to bromine, whose supposed value as an antidote originated with Reynoso.

But who, finally, as Dr. Brainard asks, put in the very needless corrosive sublimate of this heroic prescription? And here once more we consign the question to the ingenuity of the profession and the chances of future elucidation.

# REVIEWS.

ART. IX.—*Medical Diagnosis, with special reference to Practical Medicine. A Guide to the Knowledge and Discrimination of Diseases.* By J. M. DA COSTA, M. D., Lecturer on Clinical Medicine, and Physician to the Philadelphia Hospital; Fellow of the College of Physicians of Philadelphia; Corresponding Member of the New York Pathological Society, &c. &c. Illustrated with Engravings on Wood. Philadelphia: J. B. Lippincott & Co. 1864. 8vo. pp. 689.

VERY few books have been more wanted than thorough, correct, and available manuals of medical diagnosis. The separation of this department does not seem to have been fairly attained until recent times. The subject, of course, is fundamental, and essential to any scientific consideration of diseases; but its study has always been interwoven, more or less, with that of other topics, equally essential, and naturally connected with it. Thus, with the ancient writers, as in the Prognostics of Hippocrates, diagnosis was made subservient to prognosis; or, as in the treatise on the Causes and Signs of Disease, by Aretæus, adjunct to etiology; or, else to pathology, as in the work *De Locis Affectis* of Galen. Although the aphorisms of the earliest of these writers, and the works of Cælius Aurelianus and of other ancient authorities contain much concerning the signs of disease, yet we do not know of a single special treatise upon diagnosis, so early even as the time of Sydenham. If that of Fernel can be called such, it is one of the oldest. Beauvais, about the commencement of this century, produced one which has decided merit. So has that of Sprengel, although with a mixture of good and bad qualities. The work of Marshall Hall, first published in 1817, that of Professor Schill, and those of Louis, Racle, Laycock,[1] and Barclay, are the most important of the recent efforts to fill this want of medical literature; not forgetting some immortal treatises on special departments of diagnosis, such as those of Auenbrugger and Laennec.

Of course, as diagnosis is built, in part at least, upon pathology—as diseases must be individually known before they can be differentially defined, the place of the former department in the genesis of medical science must be one of sequence rather than of precedence. We are not yet ready for a complete elaboration of semeiology; for this, in its statements, requires a classification, not only of morbid conditions, but of diseases. Now, all conditions of organic and functional, or general and vital disorder, are far from being understood; much less are all the lines of distinction between what are called diseases finally made out; so that the perfection of the science of diagnosis awaits that of nosology.

This dependence is obviously a source of some difficulty and inconvenience to every writer upon diagnosis at the present time. In the "discrimination of diseases," *what* diseases are to be named for discrimination; and how are they to be grouped together? Shall a pathological, a clinical, or a

[1] On Medical Observation and Research.

purely arbitrary classification be adopted? Having no perfect pathological one, for the purposes of diagnosis clinical indications may well be followed, with such arbitrary construction as the present ambiguities of medical knowledge and opinion require. Such has been the plan of the author of the work before us; and we may anticipate a later expression of opinion by stating that it has been very well carried out.

Dr. Da Costa's plan does not differ very widely from Barclay's, although his topics have another order of succession. Each, however, includes a few subjects which the other omits. Dr. Da Costa thus excludes diseases of the ovaries, uterus, bones, joints, and muscles; and gives a chapter upon poisons and parasites. One peculiarity of importance in the arrangement of Dr. Da Costa, is, the association of disorders in groups characterized by prominent symptoms or physical signs. Although in Marshall Hall's work this is done in one or two instances, and occasionally, also, in Barclay's, particularly in describing abdominal affections, yet the idea is by neither of these writers so regularly and usefully carried out as in the book before us. It is a natural, and no doubt frequently serviceable mode of presentation of clinical groupings; while it is often necessarily subordinated to the commonly accepted classifications.

Two stand-points offer themselves primarily to the student of diagnosis; that from which he views the functional and physical changes of the organs as signs of disease, and that which considers diseases as marked and ascertained by characteristic signs. From both he deals with the same objective and subjective signs, but in different aspects, which should become equally familiar to the accomplished diagnostician. Though diseases are not *entities*, yet neither are they merely indefinite and constantly intermingling changes in the conditions of the body; there is an individuality in the morbid movement in very many of them, the recognition of which alone can elevate semeiology to much dignity as a branch of medical science. The study of the signs of disease from the first of the above-named stand-points, and especially of those obvious and general signs which concern the position of the body, the expression of the countenance, the skin, pulse, tongue, and sensations of patients, occupies Dr. Da Costa's first chapter.

While an analysis of the whole of the contents of so large a book would be obviously beyond our limits, it is proposed in this review to notice some minor points, especially where they admit of question; assuring the reader that he will find general soundness, we may say almost undeviating accuracy, to prevail in the work, so as to leave us little to discuss except these lesser matters. A high valuation of its good qualities justifies a desire to point out even what might appear to be almost trifling defects.

Summary and aphorismal statements especially demand carefulness; because a hasty, and above all a young reader, may not always remember to find the correction or qualification of a partial account of a subject in a distant part of the same volume. Thus we must object to the sentence (p. 30), in which it is said that "a dusky flush on the face, particularly if associated with rapid breathing, is almost a certain indication of inflammation of the lung." The omission of the word "particularly" would have made it safe enough, notwithstanding the usual (moderate) acceleration of breathing in typhus and typhoid fevers, in which the face is characteristically flushed.

The general account of the *pulse* given in this chapter is good, though brief; but a verbal mischance may again be glanced at (p. 32), where it is said that "in great debility the pulse rises; and the more depressed the

vital condition, the higher the pulse becomes." If it were stated that the *frequency* of the pulse "rises," or becomes "higher," with great debility, it would be correct; but it is difficult to dissociate the idea of *elevation* in the pulse itself from increase of force.

A more positive question may be ventured upon in regard to the account of the "dicrotic" pulse (p. 33). This is called "a form of tense pulse, in which each beat seems double, sometimes met with in fevers, and oftener in hemorrhages from internal organs." Less familiar with it in connection with hemorrhages, we must dissent from its being designated as a *tense* pulse, as it occurs in typhus and typhoid fevers. The reverse of this we believe to be true; that it is best explained by a *loss* of tone and tension in the arteries, causing the arterial rebound to follow the heart's impulse sluggishly, after a slight but perceptible interval. Neither is it by any means always, as stated, when persistent, a sign of "evil augury."

Cerebral, spinal, and nervous disorders are taken up in the second chapter. A *regional* subdivision is thus entered upon; which is, after all, eminently convenient as far as it goes. In the valuable manual of M. Racle[1] it is the only one pursued systematically. Dr. Da Costa adds, very judiciously, full chapters upon dropsy, diseases of the blood, rheumatism and gout, fevers, &c. Of these hereafter.

Those symptoms and morbid states affecting the brain, cord, and nerves, which have rather a general than a specific significance, are first considered; as, derangement of intellection, of sensation, and of motion. Delirium, stupor, coma, and insomnia, belong to the first of these.

Psychopaths would object to an implication contained in some expressions several times repeated, namely, that mental derangement may occur independently of cerebral textural change (pp. 40, 50, 70). Thus, of illusions, ocular spectra, and phantasms, it is said that "they are more common in derangement of the mind, temporary or permanent, than in actual disease of the brain." In the table of cerebro-nervous disorders (p. 70), insanity is placed among the *functional* affections of the cerebrum. This contradicts the dogma from which scarcely any writer upon the subject now dares dissent, that mania, monomania, melancholia, &c., are all invariably dependent upon some (still undefined) organic change in the brain, without which, under causes of *merely* functional disturbance, only delirium, toxic coma, or insomnia could be produced.

In the account of acute meningitis (p. 71) we miss the mention of the almost universal *slowness* of the pulse in the middle stage, following the febrile acceleration of the onset, and preceding the feebleness and rapidity described as belonging to the pulse of the stage of exhaustion. As to the diagnosis between meningitis and the head-symptoms of continued fevers (p. 73) a fuller statement would include the fact, that nearly always there is in the former, in the early and middle period, greater relative heat of the head, and more obvious fulness of the temporal bloodvessels and throbbing of the carotids, than in the latter.

Of tubercular meningitis, it is observed that "it is very plain that many of the symptoms are attributable to pressure of the fluid on portions of the brain." A like recognition of the influence of such pressure occurs in the section upon apoplexy; admitting (p. 88) that the latter may occur (although without pathognomonic signs) from serous effusion alone. In this admission, our author differs positively from Dr. Todd, but agrees with

[1] Traité de Diagnostic Médical; ou Guide Clinique pour l'étude des Signes Caractéristiques des Maladies. A Paris, 1854.

the large majority of previous writers; and we believe Dr. Da Costa to be right. At the same time, in all cases of meningitis, simple or tubercular, the adhesion of the arachnoid at the base of the brain from exudation of plastic lymph, limiting the vibrations of the sensorial and sensorimotor part of the cerebrum, and impairing also directly or indirectly those of the medulla oblongata, may be supposed to be of importance toward the fatal result.

Cerebro-spinal meningitis is described (p. 78) as "generally not met with save as an epidemic disease, which presents itself at different times in somewhat different forms." In its most common characters it is said to be gradual in its approach, with an average duration of two or three weeks; occasionally the seizure being sudden, and death resulting in a few days. Headache, delirium, irritability of stomach, throwing back of the head and convulsive action of various muscles, and a spotted eruption, sometimes petechial, about the third day, are frequent symptoms. In all of this, except rate of progress and duration, we see a close resemblance to the remarkable epidemic lately observed in the vicinity of this city and elsewhere, to which our author refers in a later part of his book. There is an important difference, however, in the described rate of progress; nor does this agree exactly with the account given by Boudin of a number of European epidemics of cerebro-spinal meningitis, to which reference was made in some remarks published in the last number of this journal.[1] The disease which epidemic cerebro-spinal meningitis is said by our author most closely to simulate, is typhoid fever; this can hardly be said of our present epidemic, whatever be the name by which it is called. To this subject, however, we may return hereafter.

One of the minor omissions to which it is almost hypercritical to refer, but which have their importance to the uninstructed reader at least, is that of the horror and dread so generally (though not invariably) connected with the illusions of the sufferer with delirium tremens. It is mentioned only in the account of the diagnosis of acute mania (p. 85), as "the alarm," but is not suggested in the description of the malady of which it is so characteristic. The *familiarity* of such a symptom may well *account* for the oversight, but, in a treatise intended to be elementary as well as exhaustive, hardly justifies it.

An important statement is made (pp. 82–3) of the occasional need of diagnosis between simple mania-à-potu and a condition of "extreme cerebral congestion, or inflammatory action, produced by the same exciting cause that has brought on delirium tremens." In this blending of two morbid states, the pulse is tenser, the skin hotter, and the stomach somewhat more irritable than in pure mania-à-potu. Sometimes convulsions, strabismus, and coma set doubt at rest. It might be added that the history of the case commonly aids the distinction, as such a condition usually follows a short but violent debauch, in one not long or constantly inured to great excess. We have known such an attack to occur more than once at considerable intervals in the same individual, and once found great benefit to attend the abstraction of blood by venesection, which, in pure delirium tremens, would be destructive.

After the affections "of which delirium is a prominent symptom," our author considers the diagnosis of those marked by sudden loss of conscious-

[1] Transactions of Philadelphia College of Physicians, Am Journ. of Medical Sciences, July, 1864, p. 93.

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ness and of voluntary motion, of which the chief are (leaving epilepsy for the convulsive disorders) apoplexy, sun-stroke, and catalepsy.

A full account is given, we should fear in almost too positive terms, of the indications by which we may determine the *seat* of hemorrhage causing apoplexy. We quote a portion of it only (p. 88).

"In the vast majority of instances, the blood is effused into one of the corpora striata and optic thalami, and we find, in consequence, only one-sided paralysis. If the lesion be in both hemispheres, the palsy is on both sides of the body, although almost invariably more complete on one side than on the other. Yet a double-sided palsy does not justify an absolute opinion that the extravasation of blood into the brain substance is double-sided. It betokens also an effusion into the ventricles. But ventricular hemorrhage is, besides, distinguished by profound coma and by tonic contraction of the muscles.

"Hemorrhage into the corpora quadrigemina presents most frequently this combination of symptoms: muscular tremblings, convulsions, impairment of sight, and alteration of the pupils. Cerebellar hemorrhage gives rise to very temporary loss of consciousness, to relaxation of the muscles of the limbs without paralysis or impaired sensibility, and to frequent vomiting. In hemorrhage into one-half of the pons, there is palsy of the extremities on one side, and of the face on the other."

The distinctions between apoplexy and the affections liable to be confounded with it, are very clearly drawn. We have only to notice, in passing, an apparent forgetfulness, more conspicuous on an earlier page (p. 42), of the importance of the *diverse* action of different narcotics on the pupil, which meets, it is true, full correction elsewhere in the book. One of the least familiar conditions causing apoplectic symptoms is *obstruction of the cerebral arteries.* This is usually an attendant or sequela of endocarditis, with valvular vegetation, causing embolism.

"The usual locality of the impaction is, according to Virchow, in the artery of the fossa of Sylvius; and the consequences of the interrupted circulation are at once perceived in the adjacent centre of motion, the corpus striatum. The palsy that ensues in connection with the apparently apoplectic phenomena is one-sided, and the facial paralysis is on the same side with that of the limbs. Other peculiarities of the hemiplegia are, that its onset is not of necessity attended with loss of consciousness, or that this is slight and of short duration; that the palsy is often quickly followed by gangrene of the extremities, or is associated with disturbance of the kidney, or with enlargement of the spleen and tenderness in the splenic region, produced by an impaction of fibrin. Just as in apoplexy, we may find, in obstructions of the vessels, softening as a result of the accident; nor are the symptoms of this sequel different from what they are when it is owing to more usual causes. Occasionally the clot is not washed into the brain, but is formed in one of its arteries. The thrombosis may extend thence as far as the common carotid. Hasse, who has placed two such cases on record, mentions that, independently of the cerebral symptoms, they may be recognized by the absence of pulsation in the carotid of the affected side, and its tense, corded feel." (pp. 91–2.)

Our author's account of *sun-stroke* lacks, to be complete, the recognition of the fact that exposure to the direct rays of the sun is not necessary to produce dangerous or even fatal exhaustion from heat. The condition resulting in such a case is correctly described by him as belonging to those instances in which "the abnormal manifestations come on gradually, the patient at no time becoming insensible," except that *headache* is sometimes entirely absent, the brain having no more to do with the attack than any other organ. Here the patient appears to suffer from a *blood-change*, under the influence of high temperature.

In *epilepsy*, a sign is given which, so far as the detection of feigned

attacks requires, is pathognomonic, viz., the insensibility of the pupil. Dr. Da Costa does not mention, however, that *dilatation* of the pupil is also a common symptom of chorea, its normal action in response to light being an indication of convalescence.

An excellent table compares the characters of epilepsy with those of hysterical paroxysms. Such tables have great convenience to the student both for study and reference. Several of them occur in different parts of the volume before us; but a yet larger series, even on the elaborate plan of those of Marshall Hall's work, would be still better. This may seem to be a very mechanical sort of labour for a scientific treatise; but, in our *telegraphic* age, condensation for speedy use is a current demand in all departments.

*Exhaustion of brain-power*, such as occurs among professional or literary men, or in any whose mental faculties are overstrained, is well described, as an affection which may be confounded with softening of the brain.

"This sometimes comes on very suddenly, with signs like those of a collapse; at other times it is slower in its development. Its manifestations are, a slight impairment of memory, and an inability to read or write, save for a short period, although the power of thought and of judgment is in no way perverted. Nor is the power of attention more than enfeebled; the sick man is fully capable of giving heed to any subject, but he soon tires of it, and is obliged from very fatigue to desist. He passes sleepless nights, is subject to ringing in the ears, cannot bear much exercise, is troubled with irregular action of the heart, and with a frequent desire to urinate; but he does not lose flesh, and his digestion is unimpaired." (p. 111.)

The phenomena of such a case differ from those of cerebral softening, by the absence of headache, or its far less marked and permanent character, by the unimpaired intelligence, and by the non-occurrence of spasms, or of paralysis of motion or sensation. Dr. Da Costa does not attempt to define the condition of the brain belonging to cerebral exhaustion, beyond a probable impairment of nutrition. Opportunity to watch closely a case of the kind has strongly impressed us with the importance of *dilatation* and *loss of tone* in the *cerebral bloodvessels* in its pathology.

Researches by various authors, especially Romberg, Skae, Aran, and Duchenne, have been freely consulted by our author, upon the obscure subject of the different forms of general paralysis. Three disorders are separated by these writers, which certainly a superficial examination would be likely to confound as one. These are, "general paralysis," so called, the "*ataxie locomotrice progressive*" of Duchenne, and the "progressive muscular atrophy" of Aran and others. We have not space to cite the distinctions laid down between them. Many readers will, however, incline to favour the belief that they may all be, *pathogenetically*, grades or varieties of the same essential affection, since it is difficult to suppose even a progressive muscular atrophy to be altogether independent of a morbid state of the nerve-centres, inducing the impairment of action and nutrition in the muscles.

In this cursory notice of Dr. Da Costa's chapter upon affections of the brain, spinal cord, and nerves, we have not named, even, all of the headings under which those affections are grouped by him, much less the disorders themselves which are considered. No omission of importance is observable in this chapter, unless it be the non-consideration of *spinal irritation*, which is named in a table (p. 70) with other functional disorders of the spinal cord, but is not afterwards mentioned. It may be pre-

sumed that this omission is intentional. Dr. Barclay, in his work on *Medical Diagnosis*, alludes to spinal irritation only to object to the term as erroneous, and to resolve all the cases so classified into hysteria and neuralgia. Dr. Inman, of Liverpool, has made a more elaborate attempt to upset the popular and professional theory of spinal irritation, arguing most plausibly to show that the symptoms are not even neuralgic, but *muscular*, deserving the name, which he has given them, of *myalgia*. Now, although Barclay is probably right in eliminating many supposed pains in the back and other symptoms as purely imaginary, and Inman may be correct in referring others to the muscles (a recognition of some importance, no doubt, and the term myalgia ought therefore to be retained), yet there *is* a class of cases which every practitioner sees, which, clinically speaking, requires a place by itself. If the term spinal irritation be undesirable, let it be dropped or changed; but it is no worse than many others long kept by the common consent of the profession.

Diseases of the upper air-passages are next taken up in the book before us, in Chapter III. This chapter is sufficiently full, although brief, and is written with great correctness as well as clearness. In the next, occupying 187 pages, we have discussed the diagnosis of diseases of the chest, including those of the lungs, heart, and thoracic aorta. The subject of physical diagnosis and its methods is first expounded systematically, and with as great simplicity as the topic admits. The student is fatigued with no unnecessary complications or parade of difficulties; the reason is appealed to as well as the memory and the sense, and the necessity of thought in making use of physical, as in all other modes of diagnosis, is insisted upon. We have only to wish, here and there, for a fuller consideration of the *rationale* of physical signs, the explanation of which, when attainable, must aid the mind in interpreting their meaning in doubtful cases. The wood-cuts illustrating the exploration of the lungs diagrammatically, do not appear to us to add much to the lucidity of the text. Those of the heart are of more service, decidedly.

Dr. Da Costa does not value highly *minute* measurements of the chest for the purposes of the physician. Nor does he consider the spirometer of much practical use in diagnosis. In both of these judgments he is no doubt right. The graduated tape will answer for the one purpose, and inspection and palpation of the chest-movements will suffice for the other. For percussion a pleximeter, other than the finger, is of advantage only in examining the abdomen.

It is stated (p. 150) that dulness of resonance on percussion is always associated with an increase of resistance to the finger. Though true, some qualification of degree might be mentioned. The increase of resistance is not always *in proportion* to the dulness; and sometimes, with delicacy of touch, aid in diagnosis may thus be obtained. Between perityphlitis involving the areolar tissue around the cæcum, and distension of the gut by impacted feces, for example, some difference may be discerned in the resistance, as marked at least as any in the degree of dulness, by which the *depth* of the tumescence may be inferred. A peculiarity in the impression upon the finger is observed, also, in hydatids of the liver, and occasionally in ascites. Piorry considers difference in resistance to be almost as important as difference in resonance; but, certainly, its appreciation requires more delicate perception.

Quality or character of percussion-sound is divided by our author as it is *clear*, *dull*, or *tympanitic*; the metallic and cracked-metal sounds also

being superadded. Variations of all of these in *degree* or intensity are recognized, as well as in *pitch*. This classification includes all that is important, in the simplest manner, and appears to us preferable to that of Skoda, who names differences of degree of resonance as *full* and *empty* sounds. The terms proposed by Piorry, thigh-sound, liver-sound, stomach-sound, &c., are very wisely ignored, being too ambiguous for utility.

In auscultation, Dr. Da Costa has investigated the comparative intensity of the vesicular murmur on the two sides of the chest; with the result of confirming the assertion of Dr. Flint, in opposition to that of most other authors, that a stronger, more vesicular inspiration belongs to the left lung; while more expiration, more of the bronchial element, is presented by the upper portion of the right.

Changes in the vesicular murmur are designated as alterations in intensity, viz., puerile, feeble, and absent respiration; alterations in rhythm; and alterations in character, *e. g.*, rude respiration. The rhythmic irregularity called *jerking inspiration* is thought to be present under too many different circumstances to have by itself much diagnostic significance. When limited to the apex it may excite or corroborate a suspicion of tubercle.

Cavernous respiration is admitted by our author among the cognizable auscultatory sounds. Laennec may have defined it ambiguously; but Skoda's objections cannot properly go farther than to limit the application of the term. There certainly are blowing sounds which are not purely bronchial, however they may be influenced by the connection of cavities with the bronchial tubes. Dr. Da Costa describes cavernous respiration as "less diffused, much more hollow, and, above all, of a much lower pitch than ordinary bronchial respiration." But the lowness of pitch does not appear to us necessarily constant. It is rather a *difference* of pitch and character, *usually* lower, which enables the ear to determine the cavernous origin of the sound. A cavity of a certain size and shape, with firm walls, or having a narrow and tense opening, may, as Skoda remarks, give rise to an almost hissing or whistling sound, distinguishable from the sibilant rale chiefly by its localization and persistence.

The crepitant rale of pneumonia is explained in our book by "the agitation of fluid in the air cells, or in the finest extremities of the bronchial tubes." More satisfactory to us is the view which accounts for it by the forcing open, during inspiration, of the air-cells, agglutinated together by the lymph of exudation. Between this and "crackling" a difference exists, not only in the number and fineness of the vibrations, but also in their uniformity or equability. Our author declares that—

> "As the result of investigations undertaken to ascertain whether there is any positive difference, as far as the ear can detect, between some of the finer kinds of friction-sound and fine moist rales, I have come to the conclusion that there is frequently little or none; and still less is there between crackling and the crackling variety of friction-sound, or between this and the vesicular rale." (p. 167.)

Auscultation of the voice is considered by Dr. Da Costa as affording information of very small value. It will be impossible for us, however, to linger over this part of his volume. Two good practical hints may be quoted as to the examination of the chest in children; namely, always to auscultate the child's chest before percussing, as the latter gives most alarm, and to place the ear first, for the same reason, to the posterior part of the chest.

Among the special diseases of the chest whose diagnosis is treated of,

hooping-cough is spoken of as *epidemic*, with no word of its contagious character. Certainly the evidence of the latter is as great as it can be in any disease not capable of inoculation.

A somewhat rare affection is described under the name of *plastic bronchitis*. It may be acute or chronic; the only diagnostic sign is the expectoration of a membranous material, in thin shreds or moulded into an accurate cast of a bronchial tube and its ramifications. The little round solid pellets which phthisical patients, or even some persons in perfect health, cough up from time to time are said to be the result of a plastic bronchitis on a very limited scale.

*Collapse of the lung* is carefully discussed, following the researches of Legendre, Fuchs, Gairdner, and Rees. Lobular collapse has undoubtedly often been mistaken for lobular pneumonia. When dependent upon obstruction of the bronchial tubes by inspissated mucus, the removal of this may cause a sudden disappearance of the morbid state with all its signs. It is not always, however, so dependent. Any want of power to fill the lung-cells with air may induce it. The sign first mentioned by Dr. George A. Rees has been repeatedly confirmed under our observation; it is the moving inward and receding of the ribs during inspiration instead of their expansion.

The diagnosis of phthisis is held by our author to receive but little aid from the microscope. The fragments of pulmonary fibrous tissue in the sputa show the partial disintegration of the lung, but they do not necessarily prove this to be of tubercular origin. And "tubercle-corpuscles" cannot easily be distinguished from shrivelled pus-cells. Nor can a "pre-tubercular stage," though it not improbably exists, be ascertained with positiveness by physical exploration.

> "It does not seem to me that the advocates of the possibility of detecting phthisis at this stage have clearly proven their point. On the one hand they lay claim to signs, such as diminished expansion of the chest, decreased vital capacity, a murmur, feeble and remaining feeble on forced breathing, hæmoptysis, even slight dulness on percussion—a combination which we are in the habit of regarding as evidence that tubercle already exists. On the other hand they assert that defects of temperature, lessened muscular power, improper assimilation, emaciation, sore throat, and slight, dry cough, are prodromic symptoms. Yet all of these may be associated with a temporary derangement of health, and all of these are infinitely more frequently so associated than with threatening consumption. And to say that they become of value only when coexisting with the physical signs alluded to is but saying that they are the clinical phenomena which, thus grouped, we are in the habit of accepting as proof of the first stage of the disease." (p. 202.)

Among the affections with which phthisis, without due care, may be confounded, *chronic pneumonia* and *chronic pleurisy* are mentioned. We object to both of these names. If chronic pneumonic consolidation be "commonly called chronic pneumonia," it is still more common to understand by pneumonia an inflammation of the lung; and this is certainly not present (but only antecedent) in many, if in any, of the cases of chronic consolidation. True chronic pneumonitis is a rare disorder. So, too, with "chronic pleurisy." The effusion is the *consequence* of the inflammation, not the sign of its presence. We maintain that the author of a book intended to be a standard manual of diagnosis should influence the nomenclature of the science so far at least as to avoid incongruous terms which are not made absolutely necessary by constant usage.

In the account of pulmonary *abscess* as distinguished from phthisis by

its signs, our author has perhaps given too little prominence to the suddenness of the commencement of the expectoration in the former, which can, almost always, be traced in its history. He admits a question whether there be not a form of *scrofulous* phthisis which is not tubercular, occurring especially among children of the poorer classes. A case is given in illustration; the child dying of an injury while improving under anti-strumous remedies, autopsy showed in the greater part of the left lung and a portion of the right, yellowish cheesy deposits, which exhibited under the microscope a large quantity of granules and some shrivelled cells, without distinct nuclei. The prognosis of the scrofulous cases may be believed to be much more favourable than that of the purely tubercular.

Although the general disposition of pathologists of late has been to recognize no essential distinction between scrofula and tubercle, yet it may be allowable at least to suppose them to be *varieties* or modifications of the same diathesis, the impairment of tissue-formations in the one resulting in more easily resolvable deposits than in the other.

Under the head of "Acute Affections of the Lungs accompanied by Dulness on Percussion," we have mentioned three of great interest, viz., acute phthisis, acute pneumonia, and acute pleurisy. Their alliance is close, notwithstanding the important difference of the presence of tubercle in the disease first named. This is well called by Dr. Condie "tubercular pneumonia." Contrary to the opinion of Lebert, this disorder is asserted by our author to be invariably fatal.

These three acute maladies are exceedingly well discussed. A few minor points only require remark in passing. Reason does not appear to us for substituting, as a name for the rale of pneumonia, "vesicular" for "crepitant" rale. The latter name is descriptive as well as familiar, and, although it is a vesicular rale, so also is, and is named (p. 223) that of pulmonary œdema. The crepitation occurring often at the back of the lungs in *low fevers* is said by our author to be "probably the result of pulmonary congestion," and to be not "dependent on inflammation of the pulmonary tissue." This statement must be received with hesitation. Real hypostatic pneumonia is proved by autopsy to occur, not very rarely, in the posterior part of the lungs in fever patients lying long on the back. But this does not at all necessitate the error in *practice* which is deprecated by Dr. Da Costa. It should not happen that "the patient's life is brought in jeopardy by withdrawing his stimulants and treating him actively" (p. 224), if the therapeutic principle be held in view that a decidedly *asthenic* pneumonia will bear stimulation, and does not require reducing treatment of any kind.

As "typhoid pneumonia" several different affections have been described. Dr. Da Costa's definition is, that

> "Typhoid pneumonia is pneumonia with symptoms of a typhoid type, and marked by rapid failing of the vital powers. The inflammation of the lung arising in the course of typhus or typhoid fever will of course be apt to present this character: but the malady is also noticed as a consequence of phthisis; as supervening in cases of erysipelas, of Bright's disease, and of delirium tremens; or as the sole apparent affection. It happens not unfrequently in epidemics, and is very often observed among negroes. It is often also very fatal among troops in the field, serving in unhealthy localities, and placed under unfavourable hygienic conditions. In many parts of the country, in which typhoid pneumonia is very prevalent, it bears the distinct impress of malaria. Again, articular symptoms seem to predominate in some regions of country, and in some epidemics." (pp. 226-7.)

"Bilious pneumonia" is also a name variously and vaguely applied. The simplest case which suggests it is not rare, that in which pleuro-pneumonia of the right side extends to and involves the liver; or in which, at least, hepatic derangement coexists with inflammation of the lung. But in warm and malarial countries, in the winter and spring especially, "pneumonia wearing the livery of malaria" appears to take the place, in some degree, of the fevers of the autumn; and is hence sometimes called the "winter fever."

Among affections which may be confounded with pleurisy, *pleurodynia* and *intercostal neuralgia* are mentioned by our author, with an effort at distinction between them which common usage hardly will sustain. Muscular rheumatism of the chest might at least be more easily and clearly set apart from pleurodynia than the latter (as the termination indicates, customarily, pain without inflammation) from any neuralgic affection of the side. It would be better, in a work on diagnosis, rather to simplify and diminish than to multiply names and distinctions. We have already alluded to Inman's name of *myalgia* as one which has a meaning capable sometimes of useful employment.

Closing his history of the diagnosis of acute phthisis, pneumonia, and pleurisy, Dr Da Costa makes some observations upon their treatment. It may be as well here as elsewhere to remark that such considerations do not appear to us to belong at all in a treatise upon diagnosis. Without swelling the volume to vast proportions, it would be impossible to give a complete statement of the treatment of all the maladies diagnosticated; and, if not complete, nor even summarily stated for all, it would be better for it to be entered upon with none. In the whole work we find but half a dozen pages devoted to the treatment of perhaps twice as many diseases; and these few paragraphs are so curt as to be unsatisfactory. Surely no student could depend for his therapeutical knowledge upon such brief statements; while the practitioner who refers to the book for important knowledge upon diagnosis, would be as little served by them. Sometimes the effects of treatment give indications for the comparison of disorders; and then, only, do they need to be adverted to in such a work.

The remarks before us on the treatment of acute affections of the chest illustrate this view. Of acute phthisis, pneumonia, and pleurisy, it is said that—

> "They agree in not demanding what is commonly called an active antiphlogistic treatment. In other words, although in individual cases such a plan of treatment may be urgently called for, it is not generally essential—nay, it is often hurtful to the well-being of the patient. By adopting this view, we avoid treating each case of inflammation of the lung or of the pleura alike, because it is an inflammation; we avoid prostrating the strength; we are not in a hurry to overthrow what we may not be able to build up again; we are not fettered to a doctrine which prevents us from using any remedies which the particular circumstances attending the case may necessitate." (p. 236.)

Why open such vexed questions in a work of this kind? We propose no criticism at present of the principles of therapeutics involved. Our author does not, however, appear to be entirely committed either to the expectant or the stimulant school of therapeutics; since he advises, for acute pericarditis (p. 292), leeching, mercurials, colchicum, and alkalies, amongst other remedies; and for perityphlitis (p. 417), leeching, mercurial inunctions, &c. He remarks, even (p. 623), that when a patient, in whom cerebral symptoms in remittent are mistaken for meningitis, is bled and freely purged, the treatment "fortunately is of advantage to him." It is not, then, on

account of the nature of his opinions upon practice, so far as they are shown, that we object to their introduction, but because of the inappropriateness of their statement to the treatise itself. By their omission, space would have been left, without enlarging the volume, for some other matter; for instance, the further explanation of the causes or reasons for certain signs in physical exploration. An example of the need of this falls under our view as we glance over the pages upon *pneumothorax;* where allusion is made to the difficulty in diagnosis presented by certain cases of pneumonia, "in which, by way of exception, the percussion-sound over the consolidated lung is tympanitic or amphoric" (p. 240). Yet the learner obtains no information as to *how* such an exception is produced or can be accounted for.

Dr. Da Costa's section upon the diagnosis of diseases of the heart is particularly well written; and the diagrams are good and useful. In his exposition of the medical anatomy of the cardiac region, he gives, as the result of his own measurements, two inches and a half as the transverse diameter of the space over which dulness exists in persons of medium size; and upwards of three inches in tall, broad-chested men. Dr. Bennett considers an excess over two inches to show abnormal enlargement.

Endocardial murmurs are considered all to have essentially the same meaning; there being no practical significance in the various comparisons and terms which ingenuity suggests for them.

A very good account is given (pp. 278–9) of the curious affection of the heart now so common among soldiers, which has elsewhere been designated as "cardiac exhaustion."[1] Pain, however, has been less constant in many cases which we have seen than in those described by Dr. Da Costa. The latter prefers to name the disorder "irritable heart."

His history of acute endocarditis and pericarditis appears to us to give almost too little prominence to the frequency of gastric irritation among the indirect symptoms. This is described (p. 293), but rather as an exceptional occurrence. The question whether "endocarditis *can* occur without a blowing sound," he answers in the affirmative. The clinical study of this inflammation is, indeed, a recent study. Least of all do we yet understand, perhaps, the evidence of the formation of clots in the heart, and of the conveyance of their fragments into the circulation; although Virchow, Kirkes, Paget, and others, have done much to clear this up. Some recent writers deny that life is ever shortened an hour by clot formation in the cardiac cavities. When at all extensive, this announces itself, says Dr. Da Costa, "by a sudden augmentation of the symptoms of obstructed circulation; the heart's action becomes exceedingly irregular; the skin cold; the dyspnœa increases, and so does the extent of the præcordial dulness" (p. 286). Racle[2] does not admit that the præcordial dulness is at all extended; but adds, as signs, the muffled and indistinct character of the heart-sounds, and failure of pulsation in arteries remote from the heart. Dr. Da Costa considers that coagulation may occur in the cardiac cavities independently of inflammation; the symptoms then being the same, and death following the impediment always within a few days.

Of fatty degeneration of the heart, there does not seem to be any pathognomonic sign or symptom. Feebleness and irregularity of the heart's action, with sighing respiration, and attacks of syncopal apoplexy or apoplectiform syncope, are among the most marked and usual of its phenomena. We

[1] Transactions of Philadelphia College of Physicians, American Journal of Medical Sciences, July, 1864, p. 89.

[2] Traité de Diagnostic Médical, p. 352.

should have been glad to see a full citation by our author of the graphic account by Dr. Stokes of the attacks of apoplectic syncope, and of its diagnosis from true apoplexy. The non-sequence of paralysis, as mentioned by Dr. Da Costa, is, it is true, the most decisive point of difference.

The last of several affections named as capable of being mistaken for dilatation, is "accumulation of blood in the cavities of the heart" (p. 304), or "cardiac engorgement." There is certainly obscurity in the terms here employed, as well as in the diagnosis itself. As, "like dilatation, this increases the area of percussion dulness," must there not *be* a temporary dilatation present? We confess, however, to no acquaintance with the affection thus described.

An excellent table is given (pp. 312–13) of valvular diseases and their signs. Our author adopts the clearly rational view, that it is not, at last, of great practical consequence to determine exactly *what* lesion of the valves exists; the important question is, whether disease of the valves of the heart is or is not present. The condition, power, and action of the cardiac muscle is that upon which long or short life, recovery or death, must chiefly turn; and the valvular state is important as it affects these. The brief remarks on the treatment of valvular affections (p. 314) include a prohibition of digitalis except during periods of cardiac excitement. This long held opinion seems now to be threatened with unsettlement by some clinical observations, recently made, suggesting the hypothesis that digitalis may be a *tonic* to the heart. Dr. Da Costa denies that valvular lesions ever occur without some abnormal character in the heart-sounds. Blowing sound may be absent, as in two interesting cases which he narrates; but in these a clacking sound takes its place. On the other hand, several observers have noticed, in certain cases, all the evidences of incompetency of the valves during life, when no structural change in them was found after death. Dr. Bristowe has explained some of these cases by supposing dilatation of a ventricle without corresponding elongation of the musculi papillares and chordæ tendineæ. This applies, of course, only to auriculo-ventricular regurgitation; but it is to this condition that the recorded instances refer.

The section on thoracic aneurism does not need to detain our attention. Of aneurism of the descending aorta, one consequence may be mentioned here, in addition to those enumerated by our author, namely, emaciation from pressure of the tumour upon, and obstruction of, the thoracic duct. This was observed, some years ago, in a case in the Pennsylvania Hospital, in which the diagnosis was made by Dr. W. Pepper, and confirmed in autopsy.

Chapter V. is upon diseases of the mouth, pharynx, and œsophagus. A mere glance at these must suffice us, as much of the volume yet remains for notice. Dr. Da Costa does not insist on a diagnosis between aphthæ of the mouth and thrush; nor does he even mention the generally supposed parasitic nature of the formation present in the latter. Between diphtheria and other forms of throat affection the distinctions are very clearly drawn. Especially apt are superficial observers to mistake for diphtheritic exudation those little yellowish or whitish points which form in tonsillitis, at the opening of the follicles on the surface of the swollen tonsils. But these, as our author says, are very limited, are strictly confined to the gland, are roundish or oval, and leave superficial ulceration behind them. Microscopically, they consist largely of epithelium, while the diphtheritic membrane is described as being composed mainly of fibrillated fibrin, of

granular corpuscles, and pus. Yet, it must be observed, epithelial cells are not scantily found, especially in simple or non-malignant diphtheria; and the little points of tonsillitis sometimes form pus before they disappear.

Some obscurity in the diagnosis of diphtheria is connected with its separation from erysipelas of the fauces, as described by Dr. Todd. The latter seems to present an earlier difficulty of deglutition, without tumefaction of the throat or glands of the neck, and without formation of a membrane. No difficulty is admitted by Dr. Da Costa to exist in regard to the non-identity of diphtheria with scarlatina, however closely allied they may be in their physiognomy.

A full, elaborate chapter is next devoted to the consideration of the diseases of the abdomen. The symptoms and diseases which affect the apparatus of digestion are extremely well delineated, but a more decided recognition would have been useful of *atonic dyspepsia* as a complaint. This, as Barclay and others familiarly explain, is separable from acute and chronic gastro-enteritis, and from all decided organic lesions of the stomach; having three morbid elements in varied proportion, namely, defective or perverted innervation (irritability), muscular debility and distension, and deficient or unhealthy secretion. Nowhere is this frequent and troublesome malady more graphically treated of, in all its aspects, than in the published lectures of the late Professor Chapman. Clinically, we do not see how the diagnostician can ignore it, whatever difficulty the pathologist may have in giving it a place. Moreover, it is practically important to distinguish between indigestion with inflammation of the stomach and indigestion from atony merely, the treatment and regimen suitable to the two conditions being nearly opposite.

Acute gastritis is considered by all authors to be very rare as an idiopathic affection. Dr. Da Costa describes cases which differed in nothing from the typical ones of Andral, save in the fatal termination and the immediately preceding symptoms. We have met with one such; but no doubt the very large majority of instances of gastric inflammation not produced by poisoning or some other direct irritation, belong to the class designated by Dr. Chambers as "gastro-hepatic catarrh." The "acute gastric softening" of Jæger, Cruveilhier, and Billard, occurring in young children, cannot be common in this country. Cruveilhier has seen it occur in epidemics. The symptoms are those of a violent and rapidly disorganizing gastritis. It may involve the intestines also.

Ulcer, cancer, and other organic affections of the stomach are fully treated of in the chapter before us. Intestinal disorders follow; colic in its various forms, and the diseased conditions with which it may be confounded; then enteritis and peritonitis. We can find space only for a few remarks upon the peritonitis of childbed fever. (p. 405.)

"What the poison is that determines the terrible disease, we cannot here inquire. It may be, as some think, atmospheric; it may be, as others hold, the absorption of putrid matter from the uterus; it may be an animal virus transmitted by the hand of the attendant; the complaint may be, as is now so generally believed, closely analogous to erysipelatous inflammation; it may be eminently contagious; it may not be so at all. These are not points, however important their solution to the well-being of thousands of lying-in women, which concern us here. For diagnostic purposes, it is of more consequence to know that the distemper prevails epidemically and endemically, that its features shift, and that the puerperal peritonitis of one year is not the puerperal peritonitis of another; in short, that while childbed fever, whatever its cause, occasions peritonitis, peritonitis does not constitute childbed fever." "Under the general name of puerperal peritonitis are grouped together several forms of peritoneal

inflammation, having not one, but several causes, accompanying not the same but diverse constitutional states, and presenting not always identical but at times most opposite indications for treatment."

Affections of the cæcum and its appendix, and disorders of which constipation is a prominent symptom, including all forms of intestinal obstruction, are ably discussed by our author. So are disorders in which morbid discharges from the bowels occur, namely, the various kinds of diarrhœa, dysentery, and intestinal hemorrhage. Diseases attended with vomiting and purging come next, cholera infantum, cholera morbus, and cholera. Upon the topic of the latter, we observe that (p. 386) the stools of cholera are said to have an extremely offensive odour. That has not been our experience, nor is it the usual statement. As to the remarks upon the treatment of cholera, besides the general objection we have ventured to make to their introduction at all, they appear to us not satisfactory. All that is said of narcotics and antispasmodics is (p. 450), that in cholera "we know rather what does no good than what is of use; large doses of opium and of stimulants are certainly hurtful." Now, if we have any conviction which appears to be well grounded, it is that opium, not in large doses, perhaps, but in moderate ones very frequently repeated, is of more value in cholera than all other internal medication. Nor does the evidence in favour of calomel in this disorder appear to us to be worth anything whatever, when the aggregate reports of many observers are considered. Having no wish to discuss the point, we refer, for this view, to the reports of Drs. Baly and Gull to the Royal College of Physicians, published about ten years ago.

Diseases of the liver are thoroughly analyzed, as to their diagnosis, in our book, chiefly following Frerichs. Those which most readers will find least familiar are *pigment liver* and *acute yellow atrophy*. The first is associated with severe malarial disease; "the liver presents a steel-gray, or blackish, or not unfrequently a chocolate colour; brown insulated figures are observed upon a dark ground. This change of colour is produced by pigment matter, which is accumulated in the vascular apparatus of the gland." (p. 460.) Acute yellow atrophy is a dangerous affection, consisting in a rapid diminution in size of the liver, with changes in its secreting cells, amounting often to their complete disintegration. To this belong most of those cases of malignant jaundice which terminate rapidly in death after violent cerebral symptoms. The malady scarcely ever lasts a week; generally a few days only elapse before the patient becomes comatose and dies (p. 465). It differs from acute hepatitis by the marked jaundice, the cerebral symptoms, the rapid diminution in the volume of the liver, frequent pulse, and occurrence of hemorrhage. It follows, sometimes, upon violent mental emotions or excesses, and it may occur during pregnancy, accompanied by renal degeneration. Jaundice of a simple and harmless character may also happen in pregnancy, from pressure of the gravid womb. The diagnosis is made chiefly by the difference of severity of all the symptoms, and especially those affecting the brain and nervous system.

Much information, to which we cannot further advert, is given upon all the chronic affections of the liver, with a minute account of the frequently difficult diagnosis between fatty liver, waxy liver, cancerous and syphilitic liver. The last is characterized chiefly by an uneven surface, caused by scattered nodules and cicatrices, coexisting with ulcers or cicatrices from secondary disease in the throat. In cancer, the organ is more enlarged, and the nodules are larger; jaundice is also more generally absent. Cirrhosis is understood by our author to depend upon "a new formation of

areolar tissue, due to inflammation of the fibrous texture, called Glisson's capsule" (p. 484), the bands that result from the thickening of the areolar structure compressing the parenchyma and destroying some of its secreting cells. The original cause is usually a chronic congestion consequent upon the abuse of spirituous liquors.

Abdominal enlargement and its various causes and their differentiation are dealt with in the same chapter, which closes with an account of aortic aneurism and the abnormal pulsations which may simulate it.

The urine and diseases of the urinary organs then occupy seventy pages. This chapter is well and carefully prepared, embracing a digest of the investigations of leading authorities, especially Lehmann, Vogel, Beale, and Thudichum. Nothing of importance is to be missed in it. There might have been advantage, however, in two or three places, in the detailed statement of some chemical procedures of which only a general account is given. The book would have thus been still more complete and useful to beginners in urological inquiry. This remark may apply to Liebig's and Bunsen's methods for the determination of the quantity of urea in the urine, Liebig's volumetric process for the estimation of the amount of chloride of sodium, and his method of separation of creatine and creatinine. For all of these the student is directed to refer for particulars to special manuals. The space which they would occupy, however, if only in foot-notes, would not have been wasted. Nor would it have been otherwise than appropriate to insert a few woodcuts, original or selected, in addition to some very good ones given, upon this subject, for which the reader is referred to Robin and Verdeil. The "rapid and absolute diagnosis of pus corpuscles by means of the microscope" (p. 535) might certainly be facilitated in a first examination by some further account or illustration of their peculiarities.

In a table, from Thudichum, of the ingredients present in normal urine, we find among those not stated in earlier analyses sarkine, trimethylamine, phenylic acid, and damaluric acid. The amount of urea passed in twenty-four hours is there given as from 463 to 617 grains; of solids altogether 850 to 1020 grains.

In reading the common statement (p. 513) that the early loss of its acidity by the urine is a significant fact, meaning nearly the same as if it had been discharged alkaline or neutral, we are reminded of an interesting observation of Inman's:[1] that, in low states of disease, the vital depression is manifested by the secretions resisting decomposition for a shorter time than usual. In a moribund condition, he asserts that the urine shows signs of decomposition almost immediately after being voided. An excellent table affords, in the work before us, a summary view of the principal reactions useful in examination of the urine.

Of affections of the urinary organs the fullest consideration is given to Bright's disease. This is regarded by the author as one affection, acute or chronic. Citation is made also of the classification of the English physicians, on anatomical grounds, which divides chronic renal disease into 1, fatty kidney; 2, waxy kidney; 3, chronically inflamed "large white kidney," the chronic non-desquamative nephritis of Johnson; 4, contracted kidney, or the last stage of Bright's disease, or, according to Todd, of gouty degeneration.

Diseases of the blood, in Dr. Da Costa's estimation, are *anæmia*, *leuco-*

[1] Foundations for a New Theory and Practice of Medicine.

*cythæmia, pyæmia, septæmia,* and *scurvy.* We have not room to discuss the questions that might be broached concerning pyæmia and septæmia, the diagnosis of which cannot be separated from their pathology. The formation of secondary purulent deposits seems to be an essential element of our author's pyæmia. The explanation of these is generally supposed to be, that they may be owing to suppurative capillary phlebitis, or to the disintegration in the vessels or heart of clots of vitiated blood, fragments of which are washed into the small vessels or capillaries of individual tissues, where they give rise to inflammation and the development of pus. Pyæmia may then, as it is remarked, "be viewed as a form of septæmia," while in other septæmic states secondary pus formations are not perceived.

Rheumatism and gout have a short but good chapter, Chap. X. The author follows Dr. Adams (as does Dr. Barclay) in describing *rheumatic gout* as an affection in which considerable articular swelling always occurs, of tedious persistence. We find in several recent writers, however, as well as in actual practice, good reason to recognize other forms, and various degrees, of the blending or *hybridizing* of the two "poisons," if such they be, of gout and rheumatism. We see frequent examples, for instance, of articular rheumatism of the larger joints in subjects inheriting some gouty tendency, which respond to colchicum and alkalies in a manner not admitted of rheumatic gout in the pages before us. Hardly enough distinctness, moreover, appears to us to be awarded (p. 589) to the diagnosis of syphilitic rheumatism. We can seldom, if ever, be mistaken in ascribing such a character to pains in the long and flat bones, with *several* periosteal nodes, in which relief is speedily obtained by the use of iodide of postassium.

The highly important subject of fevers occupies the eleventh chapter. We must be content with one or two brief remarks only upon it. Dr. Da Costa does not decide *pathologically* upon the non-identity of typhus and typhoid fever, although, as he says, "we cannot but recognize many phenomena so different that, on clinical grounds alone, if on no others, a separate recognition is called for" (pp. 607–613). We would urge that, if *clinically* different, they should be held to be nosologically so; most of all while the pathology of both, and the etiology of one, at least, of the two diseases are so obscure as they are.

Pain is spoken of (p. 600) as "an abdominal symptom of great significance" in typhoid fever. Our observation would lead us to agree with Racle,[1] who follows Broussais and Bouillaud in denying that pain is a symptom of typhoid fever as such; "its absence being the rule, and its presence the sign of a complication;" although colicky pains are not rare during convalescence. An almost dogmatic assertion attracts attention (p. 606); that the signs of peritonitis in this fever enable us confidently to announce the fact of perforation. On a previous page (p. 404), in a note, allusion was made to some cases of "rapid peritonitis without perforation," described by Thirial, without the nature of the cases otherwise being mentioned; but Prof. Wood has shown[2] reason to believe that occasional facts may throw some doubt upon, if not oblige us to "abandon," this diagnostic rule.

The "so-called spotted fever" of the present time, in Pennsylvania, New York, and New England, is described in natural connection with typhus fever. In the same *family* with that disease is, undoubtedly, its proper place; its best name might, perhaps, be "cerebro-spinal typhus." We

[1] Traité de Diagnostic Médical, p. 535.
[2] Transac. of Philada. College of Physicians, 1859.

must object to its being called "cerebro-spinal meningitis" for the same reason that our author does to catarrhal fever or influenza being called a variety of bronchitis. To quote his language on the latter point, "with as much reason might typhoid fever be omitted from the list of febrile maladies, and described as a variety of enteritis or diarrhœa."

Among periodical fevers, the term "congestive" is preserved by our author, we think to a disadvantage. That of "pernicious," now much in use, is liable to less objection. In the diagnosis between yellow fever and remittent fever, more might have been said of the early and great tenderness of the epigastrium in yellow fever. Nor is what we believe to be the general fact stated, that while in yellow fever the discoloration of the skin is nearly constant in those who survive the second or third day, and is decidedly marked, in remittent fever it is very far from constant, is less decided in character, and occurs at a variable time. *Dengue*, or "break-bone fever," is removed by the author from its often supposed affinity to the malarial disorders, and is located as "an affection with features corresponding to scarlatina." (p. 642.) It is declared to be "epidemic and contagious." On all of these points, except its epidemic or endemic character, some doubt may be entertained.

No decision of the question of the identity or non-identity of varicella with variola is ventured upon in our book; but they are shown to differ "clinically" to a sufficient degree. Again we say, if clinically unlike, then they are, or should be, nosologically separate. Moreover, in the morbid anatomy of the vesicle of varicella, and the pustule of variola, there is a distinctive difference. The former scarcely involves the true skin, in an inflammation attended by the effusion of lymph, which forms pus in a minority of instances; the latter is the product of a deep-seated and violent inflammation of all the structures of the skin, which, even in varioloid, suppurates as a rule.

Chapter XII., on diseases of the skin, is short, but not, perhaps, actually deficient. The advocates of the importance of parasitic growths in some cutaneous affections will not be satisfied with the small space allotted to the statement that, in favus only, the microscope affords us, by their discovery, a certain means of diagnosis. A fuller description, with some illustration, of these epiphytes, and (in the last chapter) of the different *entozoa*, of which, while the others are described, only *tænia solium* is depicted, would, we think, bring this part of the volume up to the level of the remainder, and render it complete for every reader.

Having now made a careful and impartial examination of the whole work, we can do no other than express of it a highly favourable opinion. It is not only a good, but, at present, the best manual of Medical Diagnosis. It has been prepared with careful research among books, at the bedside, and in the autopsy; and it is made available by a good arrangement, and a style of unusual ease, clearness, and finish. It is at the same time less diffuse and more readable than Dr. Barclay's treatise, the only one with which it can be compared. Without any of the boldness of an original innovator or leader, Dr. Da Costa has well occupied a field of great importance; and his book may be placed in the hands of any student, or on the table of any physician, with the assurance that to digest and memorize the matter of all its pages will well repay the labour it costs. It has, moreover, been brought out by its publisher in good style, with clear type and excellent paper. It may be welcomed as a text-book which will do credit to our national medical literature. H. H.

ART. X.—*On Diseases of the Throat and Windpipe, as reflected by the Laryngoscope: a Complete Manual upon their Diagnosis and Treatment.* Embellished with 116 engravings. By GEORGE DUNCAN GIBB, A. M., M. D., M. R. C. P., London; Assistant Physician and Lecturer on Forensic Medicine, Westminster Hospital. Second edition. London, Churchill: 1864. 12mo. pp. 481.

THE study of the diseases of the throat and windpipe, and their treatment, have received a new and powerful impetus from the introduction of the laryngoscope. By it the eye is enabled to detect changes, of which many could only have been suspected, and others would have been shrouded in impenetrable darkness. By it, too, the skilful hand is guided to the local treatment of diseased surfaces with extraordinary certainty and facility, and to the removal of morbid growths by the natural passages. It is strange that an instrument which opens such new fields of research, and affords such valuable aid in therapeutics, should have been so long in establishing its claims upon the profession. First brought to perfection in Germany, it was long before France or England appreciated its capacities and its advantages; and in our own country, few are even now familiar with its use. The work of Czermak, translated for the Sydenham Society, a small pamphlet by Dr. Gibb, and a few articles in the medical journals, comprise nearly all that our language can boast upon the subject. While we have been thus dormant, the Germans have pushed forward their investigations with characteristic zeal. Czermak, and his earliest student, Semeleder, as well as Voltolini, Türck, and Störk, in Germany, have been unwearied in their prosecution of this branch of science. Moura and others in Paris and in England, Gibb and Johnson in London and Walker in Petersburg, have followed faithfully and assiduously in the steps of their German predecessors.

The work now before us is, without doubt, the most elaborate which exists upon the subject. Although it is called a second edition, it is in fact a new work, as the author states, in his preface, that "the introduction of the laryngoscope has added so much to our knowledge of the throat and larynx, as to render it necessary that the greater part of the subject should be rewritten." A glance at the table of contents shows how thoroughly the author has explored his field. The chapters treat successively of diseases of the upper air passages; diseases of the vocal cords; inflammatory, specific, and exanthematous diseases of the throat; diseases arising from systemic changes; nervous affections; diseases of the mouth, nose, and continuous passages; affections of the trachea; extraneous substances in the throat; diseases and injuries of the hyoid bone; injuries of the throat; and, finally, the laryngoscope. A glossary has been appended to the work, and this we regret, inasmuch as the majority of terms for which a glossary would be needed are words of the author's own coining. We certainly cannot compliment him upon his success in this department, and we think he must ignore altogether the admirable principles laid down by Archbishop Trench upon the introduction of new words. Acantophonia, contendophonia, and the various other phonias which the author brings to our notice, seem to us as uncalled for, as they are unsound in their formation. Surely no physician needs a glossary for dysphagia, dyspnœa, &c. Epiglottitis, we think, would have been better if it followed the analogy of Iritis; and epiglottisation conveys no meaning save

what the author chooses to apply to it. But will Dr. Gibb tell us what he means by a "*cranky*" voice? He uses the adjective two or three times, as, *e. g.*, p. 269, in speaking of a gouty patient. We might suppose he meant harsh, but our "Unabridged" gives us only "sprightly."

The author's style is never easy and flowing, and at times it is careless and wanting in grammatical accuracy. Thus, on page 107, he says: "So frequent are cases of functional aphonia, and considerable as the number has been of examples sent to me by various practitioners, that I am actually embarrassed," &c. Again, on page 239: "And from there being found the compound granular corpuscles, it would seem to indicate the first stage of inflammation." On page 443, in speaking of Garcia's experiments in auto-laryngoscopy, he says: "I take this opportunity of declaring that these experiments are some of the most important that have ever been or likely to be made." And, once more, on page 449: "Ordinarily, I seldom darken my room any farther than with the usual linen blinds." Dr. Gibb has a "preferential liking for his own" écraseur; but is that more than simply a preference? And this leads us to mention the author's renunciation of all egotism, a renunciation which a perusal of the pages will, we fear, scarcely confirm. He speaks of applying a solution of argento-nitrate of mercury to the interior of his own larynx, and says it was "probably the first occasion that such a proceeding had been attempted upon oneself" (one's self). And in speaking of elephantiasis of the throat, p. 273, he says the case was the first of the kind he had examined with the laryngoscope, and "probably the first in this or any other country which had been thus inspected." We are half inclined to remind our worthy author that those cold-blooded, energetic Germans, with their large hospital fields, and their *deutscher fleiss* do not leave much untried, especially when they are the acknowledged leaders. Numerous other instances scattered through the book would, we think, subject our author to the soft impeachment; but then he has the excuse of having accomplished much in his department, and he has certainly given us a book valuable in many respects. We propose to give our readers a cursory glance at its pages, regretting that our time forbids a more detailed consideration.

The general diseases of the windpipe are treated quite at length, although there is nothing very new presented, save the laryngoscopic appearances of ulceration, of follicular disease, etc. Dr. G. recommends the local treatment of follicular disease and of chronic laryngitis, preferring a full-bellied camel's-hair brush upon a bent whalebone to the ordinary sponge; and he thinks that a solution of nitrate of silver, ℈ij—iv, ad unciam, is by all means the most desirable: indeed, a weaker solution he regards as of no value whatever. The advantages of the laryngoscope are abundantly shown in the precision with which the diseased surface alone may be touched. The section upon the diseases of the epiglottis is quite instructive, and we do not remember that our attention has been hitherto called to the deviations of the epiglottis from the vertical position. The author says: "In *eleven per cent.* of mankind, it was found to be oblique, very much or semi-pendent, or nearly quite horizontal, in persons apparently healthy." His examinations included "680 healthy persons," and the obliquity was observed in a passive condition of the epiglottis, independent of the movements of swallowing, etc. He found it in both sexes, at all ages, and in some cases congenital. This altered position may present obstacles to the examination with the laryngoscope; and still more, it may be the cause of great danger to life, as in case of being pressed down by a probang introduced in ignorance of the pendent position. Among other causes, the author says it

arises "from frequent attacks of cold, and cynanche in a lax habit: follicular disease is a common cause." It produces oftentimes urgent dyspnœa, dysphagia, and irritation in the larynx, as shown by coughing and hoarseness. Dr. Gibb's treatment seems to have been, locally, mineral solutions in the form of showers, and astringent gargles, in addition to constitutional treatment. There are numerous instances brought forward of tuberculous ulcerations of the vocal cords, larynx, and trachea, and their appearance is well represented in the accompanying wood-cuts.

In Chapter II., the advantages of the instrument are well shown, by its clearing up all doubt in those frequent cases of functional aphonia, whether from emotional causes, impaired innervation, or hysteria, &c. In the section upon organic aphonia, the subject of vegetations and growths is treated at length, and with much interest. Here the laryngoscope is alone our means of accurate diagnosis, and our most valuable aid in the removal of these growths. The author's laryngeal écraseur resembles Wilde's aural polyp snare. In many of his cases, however, local applications succeeded in producing absorption. In performing the operation, he either produces anæsthesia by the bromide of ammonium in large doses internally, or he sometimes gives a few whiffs of chloroform; and the latter he prefers. He seems not to have practised local anæsthesia, as Semeleder has successfully done, by painting the fauces with a solution of morphia and chloroform. The polypi which he removed were found as usual to consist of fibres in a basement membrane, with numerous epithelial cells.[1] Certainly, nothing can prove more clearly the value of the laryngoscope than the removal of these troublesome growths, which in many cases have been the cause of hoarseness and aphonia for long terms of years. By the removal of the growth, these troublesome symptoms are at once and permanently relieved. We trust that the reader of the volume will not shrink from the closing section of this chapter, treating, as it does, of acantophonia, contendophonia, diplophonia, and ischophonia. Indeed, we think his curiosity to know what it is all about will carry him through.

The laryngoscopic appearances in acute catarrhal laryngitis "are those of intense inflammation, for the lining membrane of the larynx is seen to be of a bright and vivid scarlet redness, with tumefaction varying in amount but generally prominent on the false vocal cord,[2] which may sometimes wholly conceal the view of the true cords. * * * It is the approximation of the swollen false vocal cords, which generally gives rise to the whistling or lisping respiration and the most urgent dyspnœa, and not the closure or narrowing of the true glottis as has been generally supposed, although sometimes the glottis is spasmodically narrowed." The same strong solution of nitrate of silver, mentioned above, is recommended as a local application; if this does not succeed, the author advises the inhalation of the steam of boiling water, and, as a last resort, tracheotomy.

Œdema of the larynx is divided into supra and sub-glottic, the effused material being in the first of a serous and in the second of a fibrinous character; the first, although apparently more dangerous, is, in fact, more amenable to treatment by early scarification; strong astringent solutions

[1] None of the cases presented by the author equal in interest the second of two reported by Dr. Semeleder, of Vienna, and republished in the N. Y. Medical Times, vol. viii., Nos. 22, 23, and 25.

[2] We wish our author had rejected this phraseology so unfortunately fastened upon us, and followed Semeleder's nomenclature of ventricular (false) and vocal (true) chords. We object, too, to the author's spelling; it is not a piece of string of which he is speaking, but the string of a musical instrument!

are occasionally of great value. The second form, the author says, is described for the first time. He says, p. 211, "In my dissections of the larynx I have sometimes found a thin yet distinct layer of areolar tissue between the cricoid cartilage and mucous membrane, and sometimes it is somewhat lax; under such circumstances, if inflammation were present, a submucous effusion would be liable to occur; but as the resistance is greater below than above the glottis, serum is exuded from the surface of the membrane, and fibrine remains behind." Quoting the opinion of Hasse, Erichsen, and Hewett to the effect that effusion cannot pass below the glottis in consequence of the absence of cellular structure, and that hence there is no such thing as sub-glottic œdema, Dr. Gibb says:—

"The views enunciated by those whose writings have been quoted are held by all pathologists, and it might seem an unwarrantable presumption on my part to dispute their correctness; indeed such is not my intention, but, as a searcher after truth, whilst I acknowledge that, as a rule, œdema of a supra-glottic nature rarely extends below the true glottis, yet the laryngoscope has revealed that isolated or exceptional cases do sometimes occur. If the two forms coexist, it is not by extension of the one to the other, for the simple reason that the effusion in one is chiefly serous, and in the other fibrinous; and as has been most correctly and I may say indisputably observed, the true cords themselves do not become œdematous, and, therefore, the one cannot extend or pass into the other."—pp. 212, 213.

The author cites four cases of sub-glottic œdema in which recovery took place; in only one of these, however, does he give us his treatment; in that case it consisted of tartar emetic, acetate of ammonia, mercurials, inhalation of steam, and nitrate of silver locally. Scarifications in this form do more harm than good.

In croup, our author recommends depletion and emetics; he has found a strong decoction of senega to produce vomiting and the discharge of membrane, when everything else seems to fail. He does not advocate tracheotomy, but, if it should be performed, he prefers the method of excising a circular portion of the trachea, thus dispensing with the use of the canula. Diphtheria he divides, according to Mr. Hart's classification, into simple, croupal, and malignant. "That it can be diminished in its frequency," he says in p. 239, "and its propagation arrested by the most vigorous sanitary measures, is a fact which is indisputable"! We would be glad if Dr. Gibb's statement could be borne out in the future, but we have grave doubts upon the point, for the disease seems to occur with equal severity under the most favourable sanitary conditions; such has been, at least, our own experience.

We are surprised in coming to the section upon cancer of the larynx, in chapter four, to find it so barren, no one case being given in which the laryngoscope had been used.

We pass on to "saccharine throat, a new and distinct malady," under the head of diseases from systemic changes. The author has already described in the *Lancet* of May, 1860, a peculiar expression which he terms the "atheromatous expression," characteristic "of certain changes going on in the system, but especially of the conversion of the saccharine element into fat and its compounds." These are either deposited or cause a fatty disintegration of the tissue, an atheromatous condition of the arteries, &c. The distinctive features in the diagnosis of saccharine throat are three, viz: "The atheromatous expression, a follicular affection of the throat, and the peculiar nature of the secretion, with the sweet taste invariably present." The face is said to have "a greasy aspect, the nose and both upper and under lips seem as if slightly swollen, the eyes are bright and

watery, there may be an arcus senilis or annulus adiposus, and the conjunctivæ look fatty." The secretion is of an oily character poured out from the prominent follicles, and beneath the secretion the fauces and mouth have an oily glistening appearance. Occasionally diabetes is also present, but not necessarily. Iodine and bromine in small doses combined with ammonium, a vegetable tonic, and the regulation of the diet seem to be the chief reliance of the author in treating this disease. He claims that saccharine throat is as easily recognizable as Bright's disease, or as Addison's; but as he has "known it for seventeen years," and gives us but three meagre reports of cases, we suspect it must be either rare or not so clearly marked as the author seems to fancy.

In the section upon tracheotomy we are glad to see that Dr. Gibb recommends Langenbeck's double hook. We have seen this instrument do such admirable service in the hands of that most accomplished surgeon that we think it deserves a place in every practitioner's tracheotomy case.

We pass on to the closing chapter on the laryngoscope itself, remarking simply that the author's separate treatise upon this subject is contained in this chapter and in cases scattered here and there through the volume. A brief history of the origin and progress of this branch of science opens the chapter. In speaking of Dr. Türck, whose name is associated with the earliest uses of the instrument, the author styles him "chief physician of the General Hospital at Vienna." Dr. Gibb has made a slight mistakes here, as, in the first place, no such office exists, and, in the second place, Dr. Türck is a *privat dozent, i. e.*, one of the third grade in the organization of that great institution. He prefers the mode of illuminating by the spectacle reflector, which we are glad to see he credits to its rightful source, Dr. Semeleder, an omission in the author's separate treatise. He generally uses for reflection an argand gas-burner or a moderator lamp, either of which should have a glass or metallic reflector behind them. As for the laryngeal mirrors, he prefers those of glass, and having either a circular or quadrangular shape, with the edges rounded off. For autolaryngoscopy he recommends Czermak's apparatus. The chapter gives the most general hints only with regard to the use of the instrument, and we fear that a tyro in the art would seek in it for advice in vain. Surely he knows better than any one else the various difficulties which may be presented to the examiner, and we trust that the promised second edition of this chapter, as a separate work, will contain more numerous and useful suggestions on this point. The instruments which the author brings forward as his own are the écraseur, of which we have already spoken; a "laryngeal fluid pulverizer" (an unfortunate name, we think), consisting of "a curved tube of silver, with an India rubber receptacle at one end and a platinum capsule at the other, so finely perforated that the holes are invisible to the naked eye;" and, finally, a scarifier for œdema of the larynx. In speaking of Moura's écraseur, which has an arrow for piercing the growth at the moment of excision, he says it "insures immediate withdrawal;" but he must know that Moura himself reports a case in which, notwithstanding the arrow, the growth fell down into the trachea.

We have gone far beyond our proposed limits, being betrayed into such a course by the interest the volume awakens in itself and as a forerunner in this department of English medical literature. Dr. Gibb deserves great credit for the large number of clinical records he gives, and we know of no work where so many laryngoscopic cases are presented. The illustrations are well done, and the typography is excellent E. T. C.

ART. XI.—*Transactions of the Obstetrical Society of London.* Vol. V. For the Year 1863. 8vo. pp. 330. London: 1864.

THE Obstetrical Society of London has been one of the most successful of the professional organizations of the present day. On its list of Fellows are inscribed over five hundred names, embracing those of all the leading obstetricians of England. An examination of its five volumes of transactions will furnish ample testimony to its progressive development in a scientific and practical point of view.

In the address of the retiring Vice-President, Dr. W. Tyler Smith, delivered at the first meeting in January, 1863, after some congratulatory remarks upon the success of the society in every point of view, a brief biographical notice is presented of the recently deceased Fellows, and then are briefly considered, first, the numerous trials for malpractice in midwifery which had taken place during the past year; secondly, the progress of ovariotomy during the same period; and, thirdly, the question, recently discussed, as to who was the actual inventor of the midwifery forceps. The address is very concise, plain, and unaffected in style; it offers, however, nothing of especial interest or value.

The professional papers which constitute the present volume of obstetrical transactions, are as follows:—

On "*Vaginal Lithotomy,*" by J. H. Aveling, of Sheffield. After a short history of the operation, a list of the cases, so far as they are known, in which it has been performed, and a detailed account of one in which Dr. Aveling was the operator, the following summary of the value of vaginal lithotomy is given:—

"Out of the thirty-five cases of vaginal lithotomy which I have been able to meet with, death has only followed in one (Mr. Erichsen's), and in this case it cannot be properly said to have been caused by the operation. M. Velpeau remarks that the consequences of vaginal lithotomy are very simple. No artery of any size is wounded, the peritoneum is too far off to run the least risk, and the cellular tissue of the vesico-vaginal septum is too dense to allow of the infiltration of urine. In short, vaginal lithotomy may be now looked upon as an established operation; for even the chance of vesico-vaginal fistula occurring can be no longer urged as an obstacle. There can be little doubt but that for the future, when lithotomy has to be performed on the female, the vaginal method will be the one invariably adopted."

Although by it vesical calculi can be safely and successfully removed, still, as Dr. Aveling remarks, in cases where the stone is small and friable, it ought never to supplant the more simple processes of dilatation and crushing.

"*Vesico-vaginal Fistula;* the mode of operating, and the results obtained in fifty-five cases, at the London Surgical Home." By I. Baker Brown, Senior Surgeon to the Institution.

The operation of Mr. Brown is a very simple one; the patient, under the influence of chloroform, is placed as in lithotomy, or, without chloroform, on her hands and knees; the bent speculum is introduced; and if in the former position, the urethra held up by a pair of Vulsellum forceps. The fistule being held by a pair of forceps or transfixed by a curved needle, its edges are to be pared by knives of a particular shape. Needles of steel and of various curves, fourteen in number, each armed with a wire, are passed, one-quarter of an inch external to the denuded surface, through the coats of the vagina and the *muscular* tunic only of the bladder, and out

again on the opposite side at the same distance from the fistula. The wire is then pushed forward, seized by the forceps, and the needle withdrawn. The ends of the wire are finally twisted round and round by the fingers, or if too high up by Weiss' self-holding forceps. The ends of the wire being cut off, the operation is completed. The patient is put to bed on her side, with her knees drawn up, and a male elastic catheter, without stylet and with attached bag, introduced. At the end of from ten to fourteen days, the wires may be divided on one side the twist, and drawn out by the forceps.

Of the fifty-eight cases of vesico-vaginal fistula admitted into the London Surgical Home, fifty-five were submitted to operation; in the remaining three the operation was not performed because of the bad condition of the patients' bodily health, the result of syphilis.

Of the total number of operations, forty-three were followed by perfect cure; one was much relieved; two died; five were not cured; and four still remain under treatment, with every prospect of a favourable result.

Of the forty-three successful cases, in twenty-four only one operation was performed; in eight two operations; in five three operations; and in six more than three operations were necessary to effect the cure. Of the two fatal cases, one, a patient 56 years of age, died eighteen days after the operation, apparently from exhaustion; the other died seven days after the operation from pyæmia.

Dr. Brown refers to eleven cases of vesico-vaginal fistula operated on successfully during his connection with St. Mary's Hospital. Of these cases, in seven the cure was effected after the first operation; in two after the second; and in two after more than two operations. He had also six cases in private practice, of which five were cured by one operation, and one by two operations. Taken together, this gives a total of sixty cases, of which the cure was effected in thirty-six by a single operation; in eleven by two; in five by three; while in eight, more than three operations were required before the fistula was closed.

Age had little or no effect upon the result of the operation. The patients were from 19 to 66 years of age, the operation proving as successful in the oldest as in the youngest. Neither did the duration of the fistula furnish any impediment to a successful operation. Although it had existed from two months to twenty years, the result was as satisfactory in many of the long-standing cases as in the more recent. Several of the patients had more than one fistula, which were cured by a single operation.

With respect to the causes of vesico-vaginal fistula; of the fifty-eight cases admitted into the London Surgical Home, forty-seven occurred in women after a labour of over twenty-four hours' continuance; thirty-nine after a labour of thirty-six hours or over; seven after a labour of two days; sixteen after a labour of three days; three after a labour of four days; two after a labour of five days; two after a labour of six days; and one after a labour of seven days. In the whole number of cases, instruments had been used in twenty-nine; exactly one-half; in four only of these had the labour continued less than twenty-four hours, and, with seven exceptions, the patient had been in labour thirty-six hours or more before instruments were used.

In twenty-four of the fifty-eight cases the fistula occurred after the first labour; in seven after the second; in five after the third; in four after the fourth; in six after the fifth; in two after the sixth; in five after the eighth; in one after the ninth; in one after the tenth; and in one after the fifteenth; in two no notice is taken as to the number of preceding labours.

In a large proportion of the cases the birth of a very large child is noted

—it weighed, in some, fifteen pounds, and in one, where the lesion happened at the fifteenth labour, the child weighed seventeen pounds.

From the foregoing statistics it is evident that the most common cause of vesico-vaginal fistula is protracted labour.

In many of the cases, during the continuance of the fistula, the patient bore several children, apparently without inconvenience, and in a few, subsequent to the cure of the fistula by operation, the patient had become more than once a mother, without a recurrence of the lesion.

"*Case of Polypus Uteri complicating Labour*," by Henry L. Freeman, M.R.C.S. A farmer's wife, æt. 37, in labour with her fifth child. The vagina found to be occupied with a large, soft mass, bigger than the head of the child as felt presenting above the tumour. The tumour had given to the patient no trouble during her pregnancy. As labour progressed, it was gradually forced down, and protruded beyond the vulva, the head of the child following closely upon it. There was no hemorrhage or undue pain. The labour was in no manner interfered with by the presence of the tumour, and terminated favourably to both mother and child. The expulsion of the placenta speedily followed, still without any hemorrhage. The tumour was now gently pressed back into the vagina, and the patient left quite comfortable. Upon a further examination, though the finger could be passed quite round the mass, no distinct pedicle was discovered. No unusual amount of lochial discharge occurred, nor any excessive pain. The next day, however, pains of a decidedly expulsive character set in, and the tumour was partly protruded beyond the external parts. Great pain was felt in the back and loins, which was relieved by an opiate. No hemorrhage. On the third day the bearing down pains increased, and a large, offensive, flesh-like mass was protruded beyond the vulva. It was without tenderness. A thick pedicle could now be felt high up in the vagina. Around the portion external to the vagina a piece of strong whipcord was tightly tied, and the mass removed with the knife. The ligatured end was now gently passed to the upper part of the vagina. The patient felt greatly relieved by the operation. The pedicle was found to be attached just within the os uteri, and seemed fully three inches in diameter. A very fetid discharge continued for some six days, when the ligature came away; warm water was freely used with a syringe. From this time the patient continued to improve. She nursed her infant, and made a good recovery.

The tumour weighed three pounds eleven and a half ounces; it was exceedingly soft and flabby, having somewhat the appearance of the placenta; it contained a number of cells varying in size from that of a pea to that of a nut, and was composed of fibres and bloodvessels.

An examination eleven days after delivery, showed that the os uteri was very nearly closed, and that not a vestige of the pedicle remained. The patient had regained her usual health and strength.

"*Observations on Ovariotomy, Statistical and Practical*," by Charles Clay, M.D., of Manchester. Dr. Clay states that for the last twenty years he has been extensively associated with some of the largest operations connected with abdominal surgery, having, since the year 1842, made the peritoneal section 116 times, namely, 108 times for the extirpation of diseased ovaries; four times where the ovarian tumour was cut down upon, it being too firmly and extensively adherent to be extirpated, with the view of breaking it up internally, and establishing by seton an extensive ulceration; once for the Cæsarean operation, and three times for the entire removal of both uterus and ovaries.

Of the 108 cases of ovariotomy, seventy-four were entirely successful, the patients living in the full enjoyment of health for many years afterwards, many of them having children of both sexes. In only two cases did the disease return in the opposite ovary. In one of the latter death took place five years ofter the operation. In the other, the opposite ovary became diseased sixteen years after the first operation, and attained a very large size. Having emigrated to the United States, she placed herself under the care of Dr. Atlee, of Philadelphia, by whom she was operated upon most successfully, being quite restored to health, and rendered capable of attending to her household duties.

Of the 108 ovarian cases, only 34 died, or less than 30 per cent.: 10 from the immediate effects of the operation, or from what is termed the shock; 10, from peritoneal inflammation, generally about the third day; 12 from prostration, about the sixth or ninth day; and 2 from hemorrhage. The deaths from shock and those from inflammation occurred chiefly in young females. The majority of the deaths from prostration were in elderly females, about the period of the cessation of the menses, and took place about the sixth day. When it occurred from this cause in younger females, it seldom happened before the ninth day. One of the cases from hemorrhage took place soon after the operation, from an exudation of blood at a large cut surface, where extensive adhesions had existed. In the other case, the patient lived thirty hours, when, after a sudden start, the pedicle ligature was cast off, and internal hemorrhage ensued, quickly followed by death.

Appended to this paper is the history of a most interesting case, in which the entire uterus and appendages were successfully extirpated through the abdominal parietes, the patient surviving the operation, and regaining health and strength.

"*On a Variety of Chronic Pain in the Back*," by Henry Gervis, M. D., of London. Dr. Gervis describes a case occurring in a female 30 years of age, who, for a period of six years after confinement, had suffered, with but little intermission, a pain in the lower part of her back. The patient had a somewhat worn aspect, but did not appear otherwise unhealthy. She had never suffered from any other symptom of uterine disease, excepting an occasional catamenial irregularity and slight leucorrhœa; nor, upon examination, was the presence of any such disease detected. On a careful exploration of the back, it was found that the pain was especially felt at the left sacro-iliac synchondrosis. Percussion or pressure at this part indicated decided tenderness. Taking hold of the ala of the corresponding ilium, and moving it backwards and forwards, occasioned a considerable increase of the pain, which was always least when the patient was at rest in a recumbent posture. It was increased by the act of walking, and greatly aggravated by any sudden twist or shock imparted to the articulation, as in slipping over the kerb, missing a step, treading upon a loose stone, etc. The general symptoms of the patient resembled somewhat those of hectic fever, with loss of flesh and appetite, and a sense of weariness. No local fulness or thickening could be detected externally, but the tenderness was considerable and limited to the synchondrosis. The patient was not a rheumatic subject; though never very robust, she had previously enjoyed good health.

Dr. Gervis considered the case to be one of congestion or sub-inflammation of one or more of the tissues of the synchondrosis, of a chronic character, following confinement, but unconnected with any existing uterine

disease. It was treated by rest, the local application of blisters in narrow strips, about two inches long and one broad, with, internally, the bichloride of mercury in decoction of cinchona, three times a day, and at night some extract of henbane and Dover's powder, and occasionally an aperient. The patient soon began to improve. Within eight weeks she was completely relieved from all pain, her general health becoming, at the same time, re-established.

"In some cases," Dr. Gervis remarks, "there is pain in the back, apparently of a rheumatic character, affecting the ligamentous and fibrous tissues about the articulation, and in some the periosteum. In these the iodide of potassium, in combination with alkalies and other anti-rheumatic remedies, is of especial service; but in others, as in the case detailed, the affection is certainly of the deeper seated tissues, the cartilage and fibro-cartilage which connect the bony surfaces. In four cases which I observed, the pain came on after parturition, and in two the children were said to have been unusually large. Possibly, in these, this was the direct mechanical cause of the subsequent condition of the articulation. The patient whose case is detailed had borne no children subsequent to the occurrence of the pain; but another patient, in a labour subsequent to the one from which she dated the commencement of her pain, suffered much from it during labour, and from its aggravation afterwards."

Sometimes there is an increase of pain during the catamenial period, which would readily lead to the supposition that some uterine mischief was its cause; but as the variety of pain referred to may certainly coexist with a healthy uterus, its increase at the catamenial period is probably due to that customary amount of lumbar uneasiness which often accompanies the periodic congestion of the uterus.

Dr. G. presumes that these cases are mild forms of an affection, whose severe form would be represented by abscess. The cases which occasionally occur of subacute or chronic inflammation, and of threatened or actual suppuration of the symphysis pubis, generally after severe labour from large size of the child, and whose diagnosis is perfectly clear, Dr. G. thinks are confirmatory of the views he would suggest of the particular form of "pain in the back" above described.

"*Case in which Amaurosis was observed eight times in succession.*" By Dr. Henry E. Eastlake, of Ireland. The patient, thirty-four years old, the wife of a painter, had nine children at full term; no miscarriages. Had always enjoyed good health. As far as could be ascertained, all her labours were natural. Had never lost more than the normal amount of blood. States that after her first confinement, her recovery was prompt and without any accident; but a day or two after her second, and seven succeeding labours, she had become suddenly totally blind of both eyes, and also partially unconscious. She regained first her consciousness, and at the end, on an average, of from three to five weeks subsequently, the amaurotic condition disappeared.

Dr. E. notices a few cases which he has met with on record of amaurosis in the parturient and puerperal female, but which in their details do not in all respects agree with the one described by him.

"*Case of Cæsarean Section.*" By J. G. Swayne, M. D. The subject of the operation was a dwarf, 42 years of age, with an extremely narrow and distorted pelvis. The section was performed after labour had continued over sixty hours. The child was alive when removed, and continued to do well; the mother died forty-two hours after the operation, evidently from the shock of the operation and the subsequent peritonitis.

"*The Galactagogue Properties of Faradization, with eight cases.*" By Thomas Skinner, M. D., of Liverpool. The cases related by Dr. Skinner

illustrate very strikingly the specific effect of localized galvanism in increasing the mammary secretion when defective or absent, from atrophy of the gland, mental emotion, diminished nervous energy of the parts, the effects of mammary inflammation and abscess, or where the secretion has been inadvertently arrested by the administration of certain medicines.

"*Medical History of Woman in Southern India.*" By John Shortt, M. D., Chingleput, Madras. Dr. S. presents in this paper a highly interesting account of the ceremonies performed by the women of the four principal castes of Southern India—the *Brahmins*, *Hindoos* or *Malabars*, *Mahomedans*, and *Pariahs*, and the mode of treatment of the females of each caste from the period of puberty to that of childbed, with a few instances to illustrate the kind of obstetrical practice pursued in that portion of India.

The chief interest of this paper would be greatly impaired were any of its details to be omitted; we shall be obliged, therefore, to pass it by without making any attempt to present an analysis of it.

"*Fibrous Polypus of the Uterus.*" By Grailly Hewitt, M. D. In this case the polypus consisted of a hard, rounded, pedunculated tumour, of the size of an egg, lying in the vagina, just outside the os uteri. The peduncle was apparently attached to the anterior wall of the uterus, and measured three-quarters of an inch in diameter. Being cut through with a pair of curved scissors, no hemorrhage followed, and the patient did well. The polypus was of the ordinary variety, nearly round, and rather more than two inches in diameter. Dr. H. stated that the chief interest of the case consisted in the fact that the nature of the disease was for over two years unknown and unsuspected by the patient. He remarked, also, as to a peculiar pallidity and general aspect of the female which very closely simulated that which is often observed in cases of uterine cancer; this peculiar appearance resulting in both cases from the continuous loss of blood.

"*Further Observations on the Use of Anæsthetics in Midwifery.*" By Charles Kidd, M. D., etc. The points discussed by Dr. Kidd are the result of subsequent experience (since his communication, vol. ii. of the *Obstet. Trans.*, p. 340) as to the caution to be observed in cases of midwifery attended by severe hemorrhage; the great value of chloroform in cases of retained placenta; the usefulness of alternating the administration of ether with that of chloroform, where the pulse sinks, as in some exhausting operations like ovariotomy. He refers to the peculiar immunity from danger in the use of chloroform or ether in obstetric practice, due perhaps to the active condition of the respiratory, abdominal, and reflex system of nerves at the time, the subjects also being healthy. He directs particular attention, in any case in which asphyxia shall result from the use of chloroform, to a new mode of resuscitation, consisting in the application of the Faradization current, not to the heart, as heretofore, but to the phrenic nerve and diaphragm.

"*Case of Interstitial Fœtation. Death.*" By Dr. Greenhalgh. "*Case of Tubal Gestation. Death.*" By John Marshall, Esq., with a description of the condition of the parts involved, by Dr. G. Hewitt. "*Case of Extra-Uterine Fœtation, in which two Fœtuses were found in Connection in the same Tube. Death.*" By N. J. Haydon, M. D., with a report on the case by Drs. Tyler Smith and Braxton Hicks. All cases of extra-uterine fœtation are surrounded with no trifling degree of interest, and when a large number of such cases, carefully observed and accurately recorded, have been accumulated and compared, they will be found perhaps to throw additional light upon the physiology of conception and gestation. We cannot, however, well spare the space necessary to present the history, in sufficient detail, of the several cases referred to above.

At the meeting held April 1, 1863, Dr. Tyler Smith presented to the society a specimen of tubercular fœtation with twins, the same as described subsequently by Dr. Haydon, on which occasion Dr. Oldham called the attention of the fellows to the possibility of performing gastrotomy in certain cases of tubal pregnancy, where death was about to result from internal hemorrhage. The diagnosis in sudden tubal rupture was well marked. Dr. Barnes thought that in tubal pregnancy, after the third or fourth month, the operation would be not only feasible, but expedient.

"*Sequel to a Case related in Vol. IV. of the 'Transactions' of the Society, of Retained Menses of two Years' Duration, caused by Atresia Vaginæ, and treated by Puncture of the Uterus per Rectum.*" By I. Baker Brown, Esq., etc. In this case the fistulous opening between the uterus and rectum closed shortly after menstruation, January, 1862. By the 10th of April ensuing the uterus was refilled with the menses, and the patient suffered greatly. The uterus was again tapped per rectum, and a large quantity of the menstrual fluid drawn off. In May the patient menstruated through the canula. An attempt was now made to keep the fistula open, by introducing through the canula some silver wire so twisted that when in the uterus it would open out. The canula, which had been in a month, was then withdrawn, and after eleven days the wire also. From June to November there was no menstrual discharge. The patient suffered much pain. November 27, the uterus being sufficiently distended to admit of puncturing, a trocar, rather more curved than that used before, was introduced, the uterus being firmly pressed down from without by an assistant. A small portion of the bladder appears to have got nipped between the uterus and the rectum, at the point pierced by the trocar, for, as the trocar entered, some urine escaped along its side. On the withdrawal of the instrument, a large quantity of the retained menstrual fluid was discharged through the canula. A tube was now introduced. For a day or two the urine was discoloured with blood. January and February, 1863, the patient menstruated per urethram. The tube was now removed, having remained in two months. After the removal of the tube, the patient menstruated twice per urethram, in March and April, without any inconvenience. She became quite well, and resumed her duties as a housemaid. In the first week in May she again menstruated, the fluid coming per rectum as well as per urethram.

"*Some Remarks upon the Treatment of Mechanical Dysmenorrhœa and Sterility, with a Description of a New Metrotome.*" By R. Greenhalgh, M. D. The instrument proposed by Dr. G. for the treatment of certain cases of dysmenorrhœa and sterility by division of the os and cervix uteri, is thus described: It is 11½ inches in length, and ends in a blunt extremity like a uterine sound, 2½ inches long. It consists of two lateral halves, which can be firmly clasped together. Each half contains an inclined plane, regulated by an adjusting screw, upon which a blade is made to move downwards and outwards by pulling the handle of the instrument. In using it, the patient being placed in the usual obstetric posture, and the position of the uterus previously ascertained by the sound, the extremity of the metrotome, well greased and guided by the finger of the right or left hand, is passed through the mouth and neck of the womb into its cavity until the shoulder of the instrument is in close contact with its external orifice. The instrument being now held firmly in situ, and the finger withdrawn from the vagina, traction made on the handle, which is connected with the two blades, will cause them simultaneously to diverge and cut their way rapidly through the strictured canal. The blades being sheathed

at the shoulder, the instrument may be withdrawn from the vagina without fear of injury to the latter. A sponge tent, or, still better, a silver stem of the requisite size, may be now passed through the divided parts into the uterus, and left there two or three days, when all fear of union of the divided edges will have ceased.

Dr. G. states that during the preceding ten months he had divided the os and cervix uteri in upwards of thirty cases, without a single casualty. Two ladies were operated on at his residence and were able to walk shortly afterwards to their homes without pain, and with little difficulty. On several occasions, also he has operated upon out-patients of St. Bartholomew's Hospital under similar circumstances and with like results.

Out of twenty-two cases which had come under his notice from time to time subsequent to the operation, eighteen had benefited considerably. Twenty were married and three single. Of the former, five had had children, but had been sterile for periods varying from four to eleven years; three had since become pregnant, one five, another three, and one two months after the operation. The two former were progressing most satisfactorily, while the third miscarried at about the sixth month. All these patients had been under treatment for dysmenorrhœa, and had derived but little and only temporary relief from the treatment to which they had been subjected; seven were cases of congenital and sixteen of induced dysmenorrhœa; eleven had been wholly free from pain since the operation, seven suffered only trifling discomfort, while the remaining five had experienced but little relief. In two of these there was persistent retroversion, with chronic metritis; in two the latter affection alone, while in the remaining case there is no apparent uterine disease, but the patient is highly hysterical, and has suffered repeated attacks of neuralgia.

The cases in which Dr. G. has found the division of the os and cervix uteri especially serviceable are, dysmenorrhœa, congenital and induced; sterility, where there has been more or less obliquity of the uterus, with a small external os uteri; endometritis, where accumulations of muco-pus take place in the uterine cavity; fibroid disease of the uterus, accompanied with great pain and discharges of coagula, and suspected and determined cases of intra-uterine polypus.

"*Case of Fibroid Tumour, situated in the Anterior Wall of the Uterus, and which obstructed Labour.*" By R. Barnes, M. D., Lond. The patient died apparently from rupture of the bladder occurring during labour. A very hard tumour of the fibroid kind was found in the anterior wall of the uterus at the lower part. It seemed probable, from the situation of the tumour and from what could be gathered from the history of the case, that it had been driven down before the child's head, and jammed against the symphysis pubis, closing the urethra. In the bladder two lacerated openings were found.

"*A Case exhibiting the Association of Spina Bifida with Hydrocephalus.*" By R. Barnes, M. D., Lond. Mr. Hutchinson believes that hydrocephalus and spina bifida owe their origin to a strictly analogous morbid condition, the one of the cerebral arachnoid and the other of the spinal arachnoid. If this be so, the occasional coincidence of the two affections at different parts of the serous investment of the nervous centres is readily understood. Mr. Hutchinson states that in spina bifida he has found the posterior portions of the vertebræ not absent but simply displaced; the missing portions of bone may be found in the walls of the cyst, being carried away from their normal position by the growth of the sac.

In the case of Dr. Barnes the child was born with spina bifida at the

lumbar region. For the first nine months after birth there was no evidence of hydrocephalus; but from that period the head began to enlarge rapidly. A photograph, taken when the child was a year old, shows an advanced stage of hydrocephalus with a large tumour in the lumbar region.

"*Face Presentation.*" By R. Barnes, M. D., Lond. This gentleman exhibited a stereoscopic photograph of a child born with face presenting taken on the third day after birth. It exhibited in a marked degree the distortion during labour in this presentation when the cranium is plastic. The occiput is flattened in, and the frontal region elevated and bulged out. The eyes, especially the right one, were rendered prominent. The mother said the deformity had already abated considerably, but Dr. B. observed that the head would probably retain to some extent in after life the peculiar moulding imparted to it during birth.

"*Case of Tuberculosis of the Uterus.*" By R. S. Tomlinson, Esq. This is a very interesting case of a form of uterine disease not often accurately diagnosed. It occurred in a maiden lady, aged fifty-five years. The chief symptoms during life were a profuse and continued uterine discharge of an inodorous, watery, dirty yellow fluid, unattended with pain. Nearly a year after she came under treatment there was pain in the back and pelvis, which gradually increased in intensity; with enlargement of uterus, loss of appetite, frequent nausea and diarrhœa, quickened pulse, great emaciation, aphthæ of the mouth and throat, œdema of the feet. Death took place fifteen months from the time she first consulted Dr. T.

On examination of the body the thoracic and abdominal viscera were found to be healthy, with the exception of the liver, which was enlarged and in a state of fatty degeneration.

"The uterus was as large as in the third month of pregnancy, measuring upwards of five inches from fundus to os, and, instead of the usual pyriform shape, presented an angular appearance, arising from a considerable prominence on each side, where the Fallopian tube leaves it. The cervix was greatly hypertrophied. The uterus, Fallopian tubes, and ovaries were filled with tuberculous masses, surrounded by a thick yellow matter, and on its removal the lining membrane of the uterus presented a pitted or honeycomb appearance from superficial ulceration as far as the cervix, where it was perfectly healthy. On opening the Fallopian tubes and squeezing them, pellets, varying in size from a large shot to a horsebean, firm in the centre and more or less softened on the surface, were thrown out with a sort of jerk. *There were no tubercles in the lungs nor in any other organ.*"

"*On the Use of Wire Loops, Horseshoe Wires, etc., for correcting Anteversion, Retroversion, Obliquities, and Prolapse of the Unimpregnated Uterus.*" By Charles Clay, M. D., Manchester. For the form, construction, modus operandi, and advantages of the particular apparatus recommended by Dr. Clay we must refer to the paper itself. Any description of the instruments would be unintelligible if unillustrated by diagrams. The remarks of Dr. C. on the displacements of the uterus and the mechanical means best adapted to rectify them, with the discussion to which the subject gave rise among the Fellows of the society are highly instructive.

"*A Case of Face Presentation; Delivery by Forceps; subsequent Sloughing or Separation of the Mucous Lining of the Bladder and expulsion of the same.*" By W. Martyn, M. D. A very interesting case. An American accoucheur would most certainly have resorted at an earlier period to instruments, and, if he had not succeeded by so doing in saving the child, would unquestionably have prevented much suffering and considerable risk of life to the mother.

"*Case of Ascites, with Ovarian Disease.*" By G. C. P. Murray, M. D. We see no particular instruction to be derived from this case unless it be, as the reporter remarks, to show the inefficiency of the palliative treatment by tapping in cases of ovarian disease, and to direct attention to ovariotomy as furnishing a greater chance for a permanent cure.

Mr. Sequira exhibited *a specimen of monstrosity*, born after four months' labour, the head presenting, with a bloody tumour protruding from back of the scalp feeling like a portion of placenta, and of the size of a turkey's egg. On birth the fœtus was found to be anencephaloid, with club feet and hands, six distinct fingers and toes on either side, &c.

"*Case of Syphilis after Vaccination.*" By R. Druitt, M.R.C.P. The patient was a boy two years old, the second child of respectable parents, both of whom and the elder child said to be quite healthy, as was also the second child until three weeks after its vaccination, when three of the six vaccine vesicles were converted into indurated chancres, soon followed by secondary eruptions of the skin and anus. There was no affection of the mouth or throat.

Dr. Oldham remarked that the possible occurrence of syphilis after vaccination was a very grave fact which had hardly excited sufficient attention. A case had come to his notice of a lady infected by syphilis through vaccination; a syphilitic sore occupying the seat of the vesicle and remaining unhealed for a long time. Two children vaccinated from the same child were unmistakably syphilized. The child from whom the lymph was obtained had no general eruption, but after a search two or three sores of a syphilitic aspect were found about the anus. The parents appeared healthy.

"*Note of a Case of Associated Hydrocephalus and Spina Bifida.*" By W. Leishman, M. D. This case affords a striking illustration of the views of Dr. Hutchinson referred to in Dr. Barnes' paper already noticed.

"*Abortion produced by Tents of common Sea-tangle — Laminaria digitata.*" By W. E. Pritchard, M. D., Glasgow. Dr. Pritchard's chief object in this communication is to call attention to this simple and cleanly mode of procuring necessary abortion.

"*Diseased Cervix Uteri.*" Dr. Greenhalgh exhibited two specimens; the one of epithelial cancer involving the whole of the posterior and extending to the anterior lip of the womb, removed from a married woman under the influence of chloroform by the wire écraseur of Weiss, scarcely any blood being lost. The second was one of simple hypertrophy of the neck of the womb, 2½ inches in length and 5¼ in circumference, taken from a married woman æt. 41 years. No blood was lost during or after the operation. Dr. G. remarked that this latter affection, uncomplicated as it was in this case with procidentia uteri, is of rare occurrence; it is frequently taken for the latter affection and treated by pessaries to the great annoyance of the patient and aggravation of the disease.

"*Notes of a Case of Chronic Hydrocephalus.*" By H. M. Madge, M. D. These notes extend over a period of three years. They are peculiarly interesting, in a medical as well as psychological point of view. As Dr. Madge remarks, the rather unusual features of the case described by him are, 1st. The fact of the child surviving severe symptoms, indicative of a bad attack of acute hydrocephalus. 2d. The enormous size of the head, which is seldom met with except in connection with congenital hydrocephalus. 3d. The little interference throughout the disease with the nutrition and growth of the body. 4th. The perfect annihilation at first of all signs of intelligence, and their reappearance to a certain extent, after the lapse of several months.

The treatment most relied on was the administration of mercury in short courses, the application of blisters to the nape of the neck and behind the ears, kept open for a very long time. Tapping the head was not resorted to, the statistics of the operation being very unfavourable—the few cases in which tapping has been productive of benefit have been those in which the effusion into the brain has been the result rather of passive exudation than of active inflammation. In the latter case, even when the effused fluid is considerable, there are sufficient grounds for hoping that it may be absorbed.

"*A Case of Stone in the Female Bladder. Vaginal Lithotomy.*" By I. B. Brown, F. R. C. S. In this case a stone weighing two ounces and five drachms was removed by the vesico-vaginal section. The patient recovered promptly without a single bad symptom.

"*Three Cases of Retroversion of the Uterus.*" By R. Hardey, M. R. C. S., London. These cases differed widely from each other, both as to cause and symptoms; their history, as given in the paper before us, is replete with interest. In the remarks appended to the account of the cases, Dr. H. remarks very correctly that great diversity of opinion prevails as to the most appropriate treatment of uterine displacements. It it very evident that no strict or specific rules can be laid down for their management. Experience proves that each will demand a particular treatment. Dr. H. is well satisfied that in uterine malflexions, but small benefit is to be expected from "the intra-uterine use of mechanical contrivances, which are often of themselves causes of serious mischief. He does not agree, however, with those who denounce pessaries as prejudicial in cases of prolapsus of the uterus and vagina. In some of these cases he has found their judicious application of the greatest advantage. He is in the frequent use of globular or egg-shaped sponge pessaries in cases of prolapsus, and finds much good to result from them, when charged with astringent solutions, replaced twice daily, and reduced in size from time to time, until their use is no longer indicated.

"*Craniotomy Forceps.*" Dr. Barnes exhibited and described a craniotomy forceps, which he believed to combine the advantages of those of Simpson and Murphy, and by a further contrivance which Dr. B. has added to it, to be more effective than any other instrument with which he is acquainted. For a description and drawing of the instrument we must refer the reader to the volume before us.

"*Case of Ovarian Dropsy, treated by Tapping and Pressure; apparent recovery for three years and a half; return of disease; ovariotomy; recovery.*" By I. B. Brown, M. R. C. S. This case is one of essential interest, proving that no adhesions were produced by the previous tapping and pressure.

"*Case of Distension of the Uterus in a Fœtus impeding Labour,*" with a "*Report upon the Anatomical Condition of the Fœtus.*" By Drs. J. B. Hicks and H. Gervis. The bladder, urethra, kidneys and ureters normal; labia majora very small; vulva and vagina wanting; clitoris prominent, urethra opening at its extremity; uterus greatly distended, very tense, of a globular form, containing about three-quarters of a pint of flaky, serous fluid; the cornua much developed, exceeding an inch in length, and allowed the little finger to be passed into them from the interior of the uterus, through openings about half an inch in diameter and of a valvular character. The cornua were impervious at their free extremities; no fimbriæ or other evidence of Fallopian tubes, on either side, save these closed cornua; ovaries flat, almond-shaped, about half an inch long, and attached to the sides of uterus at the base of each cornua. The uterus divided internally into two

cavities by a vertical septum, thinner than the walls, and having, near the fundus, an oval opening half an inch in diameter; no trace of either os or cervix, the double uterine cavity being completely closed. The uterine walls were thin and, internally, smooth and polished like a serous membrane. No vagina; lower half of rectum absent, the upper part terminating in a *cul-de-sac*, which was attached to the back of the uterus at about its centre. The usual place of rectum and vagina occupied by cellular tissue. No anal aperture, merely a shallow depression at its site. On opening the abdomen a small quantity of flaky fluid escaped; coils of intestines extensively adherent among themselves with adhesions in other portions of the peritoneal cavity, apparently the result of inflammation.

"*Three Cases of Labour obstructed by Abnormal Condition of the Fœtus, with some other points of interest.*" By J. B. Hicks, M. D., London. In the first case there was ascites of the fœtus, with cystic distension of its kidneys from obstruction in both ureters; peculiar, disintegrated condition of the placenta, punctured by crochet; recovery. In the second case the abdomen of fœtus was enormously enlarged from distension of the bladder. In the third case there was very great distension of the maternal uterus; dropsy of the amnion; very large tumour on the fore part of neck of fœtus. Induction of premature labour, fœtal tumour punctured; recovery. Of the structure of the tumour on the neck of fœtus an account is given by Drs. Hicks and Gervis.

"*On Distension of the Bladder considered as a Cause of Post-partum Hemorrhage.*" By J. L. Earle, M. D. The manner in which Dr. E. believes distension of the bladder to produce hemorrhage after delivery is by its displacing the uterus, most generally either directly upwards or to one side of the central line; the result of this displacement is to prevent the uterus from contracting perfectly, and this, independent of inertia in the latter organ. Remove the urine and the uterus returns at once to its original position, contracts fully, and thus arrests the hemorrhage. The bare possibility of post-partum hemorrhage, independently of all other injury that may result from over-distension of the bladder during gestation, parturition, and subsequently, should render the obstetrician especially careful to secure a full discharge of the urine daily until delivery is effected, and to empty the bladder of any fluid it may contain immediately or very soon after the expulsion of the child.

"*On Pertussis; its Causes, Symptoms, and Treatment.*" By Richard Marley, M.R.C.S., etc. This is a very good concise monograph on the etiology and pathology and treatment of hooping-cough, directed more especially, however, to the latter particular. It presents nothing especially novel or striking. As the *résumé* which Dr. N. presents of the treatment may be interesting to the majority of our readers we present it entire, as follows:—

"Although a prolonged practical observation has induced me forcibly to expatiate upon the advantages of a free employment of chloroform in pertussis, still I do not lay down, as a rule, the arbitrary administration of this agent to the exclusion of all others. Hooping-cough presents no special facilities in its treatment, and any one who bases his treatment upon a blind speciality will be disappointed over and over again. In all diseases we must modify our course by the special features of each case, and this rule applies to hooping-cough as well as to other complaints. In chloroform we have a remedy that either at once prevents the paroxysm, or greatly lessens its severity, frequency, and duration. But, nevertheless, an indiscriminate prejudice in its favour, to the entire exclusion of all other therapeutic agents, would be injudicious. By the employment of chloroform, belladonna, chlorodyne, and prussic acid—but more

especially the first two—pertussis will always yield, and by the rapidity of cure the numerous and fatal complications will be prevented. Of course the bowels must be well looked to, and the diet properly regulated. The food should not be solid—a hearty meal may immediately bring on a severe paroxysm or induce a relapse. Thick farinaceous or thickened animal broths will be found to be of the easiest assimilation. Ventilation, good air, and gentle exercise must not be neglected." "When the first and second stages have abated, change of air is beneficial, provided it be a change that removes the patient from a badly-ventilated room in a close and smoky town to the health-giving breezes of an open country. But even this must depend upon the season of the year. I would deprecate the removal of a patient from a warm and well-ventilated room to the piercing winds of March, or the damp, cold, and fog of November. From the setting in of the premonitory stage, the room used by the child should be of a uniform temperature. The patient must be warmly clad, and all hygienic measures strictly and carefully attended to."

We have endeavoured thus to present a fair though concise digest of all the articles in the present volume of *Transactions*, with the exception of two or three which had already appeared in the quarterly summary of this Journal. We regret that we have not been able to notice the very interesting and valuable remarks drawn out from some of the leading Fellows of the London Obstetrical Society by the reading of the several communications which constituted the basis of its transactions for the past year. The additional space required for even a very brief notice of the remarks just referred to would have extended our article far beyond the limits that, with a due regard to the claims of other articles for insertion, could with propriety have been allotted to it. D. F. C.

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ART. XII.—*Leçons Cliniques sur les Maladies de l'Oreille, ou Thérapeutique des Maladies Aigües et Chroniques de l'Appareil Auditif.* Par le Docteur TRIQUET, Médicin et Chirurgien du Dispensaire pour les Maladies de l'Oreille, Membre Fondateur de la Société de Biologie, &c. &c. Avec figures. 8vo. pp. 250. F. Savy, Paris, 1863.

*Clinical Lectures on Diseases of the Ear, or Therapeutics of Acute and Chronic Diseases of the Auditory Apparatus.* By Doctor TRIQUET, Physician and Surgeon to the Dispensary for Diseases of the Ear, &c. &c. With illustrations. 8vo. pp. 250. F. Savy, Paris, 1863.

THE volume is dedicated to Professor Armand Trousseau, who says that the author can write none other than a good book.

The first chapter is on catheterism of the Eustachian tubes. The author directs that the catheter or sound, being seized with its concavity turned upwards and outwards, the back or convexity resting against the partition and the point engaging deeply beneath the inferior turbinated bone, is to be pushed directly into the inferior meatus, where it finds a natural groove, and is to be conducted gently and slowly, without effort or violence, until it reaches the posterior extremity of the inferior meatus, where the instrument naturally engages in the opening of the Eustachian tube.

The author describes, with aid of a woodcut, a lamp, to which is attached a reflector, for the purpose of illuminating the external auditory meatus. In examining the external auditory canal he prefers the light of this lamp, in a dark room, assisted by an ear-speculum and hand-lens, to sunlight.

In the second chapter the author draws a parallel between diseases of the eye and diseases of the ear which is somewhat fanciful, and in the third claims that there is a close analogy between curing deafness by catheterism of the Eustachian tubes and the cure of cataract by the operation of extraction.

The anatomical or objective symptoms or signs of diseases of the ear are those which are revealed to the eye. They are primitive, secondary, or tertiary.

The physiological or subjective symptoms are not appreciable by the senses of the observer. They can be appreciated only by information derived from the patient himself. Such are pain, heat, erethism, or exaltation of the sensibility of hearing, torpor, and depraved audition or paracousia. In certain cases the patient hears singings, buzzings, roarings, and sounds of various kinds.

The most important subjective symptom is deafness in a greater or less degree. Aided by all the means of exploration, examination often discovers nothing; yet the patient declares that he is deaf or hard of hearing.

The primitive anatomical signs are redness, vascularization, and tumefaction.

1. *Redness.*—In acute affections of the ear the whole extent of the auditory canal presents a very manifest redness; its degree is to be estimated by comparing it with the normal colour of the healthy ear. This redness is a common sign of phlegmasia, and cannot exist unless there is at the same time an abnormal development of vessels.

2. *Vascularization or fluxion.*—Exaggerated erythema of the membranes, which in the physiological state is of a pale rose colour, becomes more or less bright red in consequence of inflammation.

3. *Tumefaction.*—When this redness and this more considerable vascularization take place, the membrane seems to be converted into a *rete mirabile*, and the swelling soon becomes manifest to the naked eye. This tumefaction is especially perceptible in the lining of the auditory canal, the parietes of which sometimes come to be almost in contact, and patients fancy there is a foreign body present. This symptom is more marked in acute than in chronic inflammations.

In the chronic state, the redness is very slight; there is less tumefaction; there is still a whitish rose coloration, but less vascularization.

These three primary symptoms constantly exist in all inflammations of the ear and eye.

The secondary symptoms are much more numerous. We find, 1, effusion of blood; 2, suppuration, abscess; 3, adhesions; 4, ulcerations; 5, gangrene; 6, granulations; 7, cicatrization, or the persistence of the preceding alterations.

1. When vascular redness and tumefaction have existed during a certain time, and resolution has not been effected by the efforts of nature or by art, ecchymoses are observed both in the canal and membrana tympani. These ecchymoses appear like flea-bites; sometimes they are more extensive. In certain cases the epidermis seems to be raised, and a slight puncture with a fine needle is followed by a droplet of blood, showing the existence of a subepidermic effusion.

2. If the disease is not checked in its course, suppuration ensues. The red tint of the ecchymoses changes to a dark, or brown, or gray red, and then a purulent spot becomes manifest, and an abscess is developed beneath the epithelium. If art does not arrest the inflammation, this abscess opens in the auditory canal. The danger is increased if the abscess is developed

in the membranous folds which compose the tympanic partition. In such case perforation is inevitable, and, as respects the preservation of the functions of the organ, the consequences are very serious.

3. When the membranes of the auditory canal have suppurated a long time, adhesions may be established between the tympanum and the ossicles, between these and the promontory; and when the ossicles have suffered displacement relatively to each other, very diverse adhesions may be set up; then all is confused; the luxated ossicles, more or less adherent to each other, fall into the drum, and the membrana tympani is shrivelled. When an attentive exploration reveals this condition, the patient may be declared incurable.

4. Ulcerations may exist in the canal in consequence of the preceding alterations. Generally they are easily cured, if they are simple and of small extent. A slight ulceration of the membrana tympani, consequent on simple catarrhal inflammation, will be generally cured without difficulty; supervening on scrofulous otitis, it will be more serious. If the ulceration is of the extent of a lentil, all efforts at cure will be unavailing.

5. Gangrene occurs in certain extremely acute affections. A gangrenous spot is established, and a more or less considerable portion of the membrane sphacelates and falls off. This occurs especially in grave fevers, variola, scarlatina, typhoid fever, and rubeola.

Under these circumstances there is loss of substance in the auditory canal and in the membrana tympani. In the canal this accident is not very serious, and in general is quite readily repaired; but if a portion of the membrana tympani is destroyed by a variolous pustule, and the process of ulceration takes place from the interior to the exterior, it is more serious and the ulcer enlarges from day to day: reparation is not possible till the economy takes it up, assisted by the efforts of nature and art. The most serious ulcerations occur in the course of typhoid fever and variola. They occupy the centre of the membrane, at a point corresponding to the handle of the malleus. Sometimes the ossicles are thrown out by suppuration, the stapes alone, owing to its firmer attachments, remaining in place; the liquids escape; all becomes dry in contact with the air; the auditory nerve loses its properties, and incurable deafness is the result.

6. When ulcers and gangrenous lesions tend towards cure, there appear on the surface of the membranes granulations similar to the fleshy buds which are observed in wounds in the process of cicatrization; from these, properly cared for, a cicatrix is still possible.

7. Complete cicatrization is sometimes effected after all these disorders: this occurs more easily in proportion to the smallness of the ulcer, and its vicinity to the circumference of the membrana tympani. If ulceration exceeds the dimensions of a pin-head, cicatrization is rarely obtained.

The tertiary symptoms include opacities of the membrana, which are due to deposits of plasma resulting from inflammation. This is sometimes absorbed.

Insensibility of the membrane is sometimes such that it may be touched with a blunt probe without exciting pain or tickling.

Change in the form of the membrana tympani sometimes occurs. From being concave at the exterior it becomes flat; sometimes it presents two lateral oblique surfaces, and upon the sharp edge which divides them the manubrium is inserted: then we may be certain that anchylosis of the ossicula has taken place. If this is still incomplete, something may be hoped from proper treatment.

There may be, also, in consequence of inflammation, hypertrophy, atrophy, induration, and softening of the tissues of the ear.

In the fifth chapter Dr. Triquet considers otites, or aural inflammations in general. His primary division is into external, internal, and labyrinthic or cerebral otitis.

External otitis embraces, first, puro-mucous otitis, and under this head he names external catarrhal, contagious, consequent on mumps, and blennorrhagic otites; second, scrofulous, phlyctenoid (myringitis), and pustular otitis; third, rheumatic; fourth, gouty; fifth, syphilitic; sixth, smokers' and drinkers'; seventh, erysipelatous; eighth, variolous; ninth, morbillous; and, tenth, scarlatinous otites.

Internal otites are, first, catarrhal; second, phlegmonous; and, third, periosteal inflammation of the middle ear.

In the treatment of otites the general rules are to ascertain and remove their causes, when possible, and to combat any existing diathesis, such as scrofulous, rheumatic, gouty or syphilitic, for as long as influenced by any one of these predisposing causes, treatment will be more or less ineffectual. Local treatment will frequently fail unless constitutional vices are corrected. The ear should be protected from new causes of irritation after the primary have been removed. While the ear is in a state of inflammation, repose of body and mind, and early hours, are important.

Bloodletting by leeches applied in front of the tragus, especially at the commencement of external catarrhal otitis, by cups and by venesection in violent cases is recommended. Dr. Triquet practises scarifications in the auditory canal, and declares that long experience has satisfied him of their utility. One or two long and deep incisions are made with a small tenotomy scarificator, having previously protected the membrana tympani against clots of blood being formed upon it by the introduction of a small dossil of cotton. To promote the flow of blood, the incisions are to be gently and frequently wiped with a fragment of sponge held in a small forceps.

In cases where there is an accumulation of pus, mucus, or blood within the drum, the membrana may be advantageously punctured with a cataract needle, at the anterior and inferior part about two millimetres from its circumference. When the instrument has penetrated the drum three millimetres at most, it is to be withdrawn a little and the blade turned on its axis, which facilitates the flow of the liquid. The speculum and proper illumination are indispensable to the performance of this operation, which is always followed by immediate relief, and even rapid cure. As soon as the immediate result has been attained, the membrana must be put at rest by closing the external meatus with a plug of cotton and a suitable bandage. Experience has shown that wounds of the membrana without loss of substance readily cicatrize, provided it is protected from the action of sonorous waves for a few days.

Purgatives, scammony, jalap, calomel with adults, and the golden sulphuret, rhubarb, and calomel with children, are useful when employed early. Emetics are often important, and diaphoretics are advantageously used in special conditions.

In acute and very painful inflammations of the ear mercury has wonderful powers. It should be employed, in general, in fractional doses till the gums are touched, when it is to be suspended, and, if necessary, resumed again.

Arsenical preparations are serviceable when there is a herpetic condition, or strumous diathesis.

Opium in small doses internally, alone or combined with calomel, procures relief; but Dr. Triquet proscribes absolutely the employment of opiate injections into the ear as dangerous, and even fatal in certain well authenticated cases. Opiate frictions around the ear are of little or no avail; but a mixture of extract of opium and mercurial ointment has prompt effect.

Emollient injections of infusions or decoctions of mallows, linseed, barley, bran, or poppy-heads are useful in all acute inflammations of the external ear and tympanum. A warm injection soothes the inflamed membranes, and as the liquid is evaporated by the excessive heat of the parts, it serves both as emollient and anodyne.

At the close of the acute stage, and during the chronic condition, injections of solutions of tannin, alum, muriate of ammonia, sulphate of copper, corrosive sublimate, administered warm, are very useful. Glycerine is valuable as an excipient in dissolving these articles. The sublimate should be dissolved in distilled water.

Certain unguents or pomatums are employed to meet the same indications. The red precipitate ointment is useful in certain forms of nervous deafness, accompanied by dryness of the meatus and absence of cerumen.

Dr. Triquet proscribes nitrate of silver, because it is painful and sometimes occasions grave symptoms. He places sulphate of zinc in the same category.

Revulsives, which include rubefacients, vesicatories, pustulents, cauteries, moxas, and seton, are of a certain degree of utility, perhaps, in some cases. It should be remembered, however, that the first cure of a deaf mute by medical treatment was effected by a seton long worn in the nucha.

In treating affections of the ear, regimen, diet, and general hygiene must not be overlooked.

The sixth chapter is devoted to a consideration of external catarrhal, muco-purulent otites, or catarrh of the external ear.

The cutaneous and almost mucous tissue which lines the interior of the auditory canal and covers the external face of the membrana tympani is very often attacked with inflammation such as is observed on other parts of the dermoid and mucous system: muco-purulent, blennorrhagic or catarrhal phlegmasia; sometimes this tissue is the seat of diseases which are clearly of the nature of cutaneous eruptions. The membrane of the auditory canal, both from its nature and its diseases, participates in the affections of those tissues which are in the vicinity of the mucous and cutaneous orifices, the lips, the pharynx, urethra, glans, rectum; these orifices are sometimes the seat of catarrhal phlegmasia, and sometimes of an aphthous, blennorrhagic, herpetic or pustulous inflammation.

The most frequent cause of this otitis is exposure to a cold and humid atmosphere. It may be induced, also, by contagion. The matter of contagion may be derived from the ear of another person, or secreted in another part of the body. Like that of blennorrhagia, it may be transferred to the auditory canal by the fingers, by a part of the clothing, or otherwise.

The symptoms of muco-purulent otitis are analogous to those which characterize inflammations of other mucous membranes. The most striking character is the puriform discharge, which is simply an increase and alteration of the natural secretion of the part. After a short time, the epithelium becomes detached from the canal; a reddish surface appears, which is formed by the papillary body thus denuded, and is simply a consequence of suppurative inflammation.

Catarrhal or muco-purulent otitis is at first limited to the lining membrane of the auditory canal, but in serious cases it invades parts more profoundly situated, especially the membrana tympani, which may be thus rapidly destroyed.

The first stage, which lasts from two days to a week, is the inflammatory. A more or less acute pain is felt in the ear, especially on a level with the tragus, which is increased by pressure on that part, and also by the motion of the jaw in mastication.

The second stage is characterized by a puriform discharge and tumefaction of the lining membrane of the auditory canal.

In the third stage, the inflammation invades the deeper parts and perforates the tympanum. The chief cause of this serious accident must be attributed, without doubt, to a maceration of the tympanum in a quantity of purulent liquid left at the bottom of the ear. This should be removed by frequent injections of tepid and appropriate liquids.

The fourth stage, which may be of indefinite duration, is characterized by swelling and hypertrophy of the lining membrane of the canal, now red, granular, and giving issue to a fetid pus.

If the membrana has been perforated, a frequent complication in strumous and lymphatic children, pus is furnished both from the parietes of the auditory canal and from the mucous membrane of the drum; and after a time, which varies between several weeks and as many months, in a great many cases reddish granulations are seen to project from the drum through the perforation of the membrana tympani, and expand at the bottom of the auditory canal. This is, indeed, the first period which characterizes polypus of the ear.

Dr. Triquet insists that in the general treatment of this and all other affections of the ear, the constitutional diathesis must be carefully studied and have a controlling influence over the therapeutic means employed.

Our author recognizes three varieties of external otitis, which he denominates catarrhal, rheumatismal, and catarrho-rheumatismal otitis. The first is a muco-purulent inflammation of the lining of the auditory canal; the second, an affection of the fibrous tissue of the ear, and particularly of the tympanic partition and articulations of the ossicula; in the third, the dermoid, fibrous, and mucous tissues are simultaneously affected, and the symptoms of each are confounded, still preserving, however, some of their peculiar shades.

In catarrhal otitis, the symptoms are redness, which is diffuse or reticulate, a pungent pain felt at the level of the tragus, and a puriform discharge more or less abundant and fetid. After the inflammation has lasted several days, a whitish, serous, and extremely acrid liquid appears at the orifice of the auditory canal, which soon becomes opaque, thick, and puriform, and so abundant at times that it flows along the neck, and so acrid that in some cases its track is marked by a red, ulcerous furrow in the skin.

Patients often complain of a sensation of pricking, or irritation, or tension analogous to that which the presence of a foreign body would produce. Dr. Triquet has been frequently called to remove a foreign body from the ear, where he only found external otitis.

The illusive sensation of a foreign body is due to the swelling of the lining of the auditory canal, in consequence of which the opposite parietes come in contact, and then the patient believes there is something in his ear.

A physician, summoned to such a patient, often feels it is necessary to search for the foreign body, and his efforts are generally productive of much mischief.

Atmospheric changes, and exposure to cold and humidity, especially to a current of air, are the chief causes of catarrhal otitis. Men are more liable to it than women. A relapse is frequent.

Dr. Triquet has no doubt that, when the discharge is manifestly puriform, it will communicate the disease if in any mode applied to the ear of another person, and the affection thus communicated will be more violent than the otitis from which it was derived. He has known many instances where the disease in one person, arising from atmospheric influences, was communicated to several members of his family without its production being explicable except by contact.

If the pain is violent on a level with the tragus, the local treatment consists in the application of leeches, followed by emollient cataplasms. The ear is to be cleansed three or four times a day with a weak infusion of black tea. After the pain is calmed, if the discharge persists, inject a solution of sulphate of copper, one part to one hundred of rose-water and thirty of honey. If this is not readily tolerated, substitute simple injections of a tepid infusion of elder, or of tar-water; and next resort to a weak solution of acetate of lead. In the chronic condition, when the discharge has lost its fetid odour and green colour, and become of a whitish-yellow, a solution of tannic acid in rose-water may be injected three times a day, for several days, and alternated for a like period with a solution of alum in water twice daily. Both should be made tepid in a water bath before injecting.

The general treatment, in adults, when there is pain, is to be commenced with calomel, thirty centigrammes of which, mixed with six grammes of powdered sugar, are divided into twelve powders, one of which is to be administered every hour. In cases of children, Dr. Triquet gives the following: Calomel 0.10 centigramme; golden sulphur 0.20 centigramme; powdered sugar 6 grammes. Mix, and divide in ten powders: one every hour. If the pain and swelling persist, continue the calomel until the gums are touched and the breath becomes mercurial.

During the whole treatment, the membrana tympani and Eustachian tube are to be frequently examined, in order that obstructions from mucus, &c., in the organ may be promptly removed.

The seventh chapter is devoted to the consideration of scrofulous disease of the membrana tympani. Cutaneous and eruptive diseases of the membrane are very common affections, are imperfectly studied, and badly treated. They alone cause most of the deafness of infancy as well as of adult age. The epithelial layer of the membrana tympani is often affected in herpes, lepra vulgaris, and in the progress of certain syphilitic manifestations.

This affection is often the first manifestation of a scrofulous condition of the constitution; when neglected or badly treated, it becomes a cause of permanent abatement or even entire loss of hearing. It rarely attacks infants at the breast, but ordinarily is met with from the period of weaning until about the eighth year.

During the first period, or at the commencement of the disease, the redness of the membrana tympani is very slight, of the hue of carmine lake, and produced by very small vessels arranged like radii around the membrane; while, at the same time, may be observed other vessels more or less numerous, which may be followed to the central portion of the surface of the membrane. In some cases, no vessel is perceived to be enlarged, so that the disease in the beginning is announced by pain, and intolerance of

sharp or even grave sounds, rather than by the anatomical signs of inflammation. Most generally, however, three or four dilated vessels may be discovered going from the circumference towards the centre of the membrane, or winding along its border, evidently superficial, forming a slight elevation beneath the epithelium, which is visible by the aid of a magnifier and reflector. But in certain highly lymphatic subjects the whole surface of the tympanum is covered with tortuous vessels, from which circumstance Dr. Triquet claims to have bestowed on this symptom of phlyctenōid otitis the term *pannus* of the tympanum. This condition is evidently a result of simple increased vascularity.

This disease of the membrana tympani is eruptive. It affects at once and especially the epidermic layer which is continuous from the skin of the external auditory canal; but one of the most remarkable symptoms is the existence of one or several phlyctænulæ or small papulæ on the surface of the partition. In many cases, a single little elevated point, of an opaque white colour, near the centre of the tympanum in the vicinity of the insertion of the malleus is all that can be seen; in other cases there are numerous phlyctænulæ (*tanquam stellæ*), on the circumference and at the centre; they are most often at the circumference where the skin of the auditory canal is manifestly continuous with the membrana tympani; their size is variable with the part attacked; thus they are more voluminous on the border of the membrane, smaller at its centre, near the handle of the malleus; but, although smaller in this spot they are more dangerous there, because at this point their ulceration is almost inevitable, involving a perforation of a greater or less extent and the fall or luxation of the handle of the malleus.

Phlyctænæ may, however, be absorbed even when at the centre; at this point they generally leave a little spot. At other times the white spot is irregularly spread, red vessels of considerable size run to it, and there is daily added to it a new deposit of plastic lymph which forms a true *vascular spot*. When this exists, particularly if on a level with the handle of the malleus, the patient will suffer from painful singing in the ear.

It often happens also that the phlyctænæ suppurate, become ulcers, sometimes embracing only the epithelium for a considerable extent, but more frequently they are deep and funnel shaped. At such time a perforation of the tympanum is also inevitable, and as it cannot take place without involving a loss of substance to a greater or less extent, the patient has a chance of suffering always from deafness and a chronic catarrh of the middle ear. In many, this serious accident is attributable to negligence or to badly directed treatment.

As soon almost as there is perforation there is a remission in the symptoms.

When several phlyctænæ exist at the same time on the membrana tympani they sometimes unite before opening, and there follows a considerable hole through the partition, and sometimes the destruction is speedily completed.

In the midst of these serious disorders, the ossicles being no longer sustained by the more or less destroyed membrana tympani, fall, first the malleus, then the incus; suppuration or mucosities bear them outward, and they are usually found some morning on the pillow or on the dressings.

The stapes alone remains in place, strongly adherent to its fenestra, thus opposing the flow of the liquor of Cotunnius and preserving the last and most important vestiges of the function of the organ. The patient will be hard of hearing, but not totally deaf; art and assiduous care may ameliorate his condition.

The discharge which appears with the phlyctænæ once established is abundant, greenish, fetid, and is rebellious to treatment. Most success has followed an active and persevering general medication.

Persons affected with myrengitis scrofulosa are very intolerant of sound, but become insensible to it where pannus tympani exists. At the commencement of this disease the pain is acute at the bottom of the auditory canal and at the upper part of the helix. Examination at this stage reveals very slight redness of the membrana; indeed its surface is often sound, or exhibits only a single point of opacity with a small number of vessels grouped around it. In many cases intolerance of sound and pain are the only symptoms. As soon as a pannus appears or a perforation is made, the pain, singing, and intolerance of noise diminish or disappear, at least for a time; but the severity of these symptoms may be brought back by exposure, change of temperature, loud noise, &c. In the acute stage there is acceleration of the pulse, thirst, loss of appetite, constipation, &c.

Strumous diathesis is the remote cause of this affection, and is made operative by inappropriate regimen, dearth of amusements, defective and deficient air, exposure to the sun, excessive clothing. There are almost as many rich as poor people attacked by this disease of the membrana tympani. The chief exciting cause is exposure to cold, especially to cold, humid air. It may be determined also by dentition, measles, scarlatina, variola, and traumatic lesions.

The disease is difficult to control, and therefore the prognosis should be cautiously formed. Relapses are frequent.

When perforation has been closed up, there are formed at those points white spots: in such cases the sense of hearing is rarely restored to its normal condition; not that the thickening of the membrane itself arrests the sonorous waves, but on account of complications in the drum and the ossicles particularly.

In the chronic stage artificial perforation of the membrana, which has been proposed and practised for the cure of deafness, is illusory under such circumstances.

The application of leeches in front of the ear, a little below the tragus, sometimes quickly calms the pain. Emollient cataplasms are to follow the leeches; but whenever employed, the auditory canal should be gently filled with cotton prior to their application to prevent the blood from entering it, because after coagulation it may be as irritating as any other foreign substance.

Emetics, purgatives, sudorifics, are sometimes useful, but the general treatment must be always regulated by the circumstances of the case, never forgetting the diathesis.

The tympanum is to be kept at rest, defended from the action of sonorous waves, which may be effected by closing the meatus with a pellet of cotton. Emollient and slightly astringent instillations are very efficacious; as decoction of poppies, a weak solution of acetate of ammonia, rose-water with a slight addition of "nitric alcohol," or a solution of sulphate of copper, one part to one hundred of water, &c. They should be always employed tepid.

Nitrate of silver in every form is proscribed.

Vesicatories are of little use; but applications of croton oil, and tartar emetic ointment behind the ear, are efficacious. Dr. Triquet has the same opinion of the seton and of the cautery to the nucha.

When perforation has occurred, the ulcer must be touched every two or three days with a pencil of sulphate of copper cut to a fine point. If the

perforation does not exceed the dimensions of a small pin-head, we may hope to see it cicatrize; but if it is more extensive, especially if a fourth or a third part of the membrana tympani is destroyed, all hope of cure is deceptive.

Chapter VIII. treats of rheumatic otitis, which has its seat in the membrana tympani, the articulations of the ossicula and in the fibrous and periosteal tissues of the ear. At first there is no perceptible alteration in the auditory canal, but redness of the membrana is very manifest. It is formed by vascular and tortuous lines which, extending from the circumference towards the centre, converge about the manubrium of the malleus. Their flexuosity, frequent anastomoses, and union at a common point are fixed and well-marked characteristics. The frequent and insupportable singings which torment the patient are attributable to these enlarged vessels. The pain is deep seated, pungent, and is always felt in other parts, as the temple, occiput, on the middle of the cranium, rarely on the forehead, but especially in the lower jaw, more particularly in its articulation. The pain is more violent at night than during the day. In serious cases the affection is accompanied by symptomatic fever. Dr. Triquet relies upon general treatment chiefly, resorting to calomel and opium, purgatives, &c.

Chapter IX. is devoted to gouty, and Chapter X. to syphilitic otitis.

Dr. Triquet, Chapter XI., speaks of an otitis which is peculiar to consumers of tobacco and alcoholic drinks. The patient long accustomed to an immoderate use of tobacco and spirituous potations under whatever form ingested, as a general rule, suddenly and during the night experiences in both ears a hissing or blowing, which is intermittent and comparable to metallic tinkling or ringing.

This morbid noise diminishes during the day, augments after meals, especially after the evening meal, and continues until morning without interruption; at the same time the slightest sounds are painful to the ear. Conversation in a moderate tone is very fatiguing, and the patient frequently stops his ears with his fingers or with cotton. This condition lasts several days or weeks, but rarely beyond two months, and then the second stage takes place.

The second stage generally commences by a sense of seeming amelioration at which the patient rejoices; the ringings diminish in a sensible manner, or even disappear entirely; intolerance of noise and sharp sounds ceases, to give place to an opposite condition; he seeks noise, boisterous conversation, and complains that people speak too low; this deceitful calm lasts but a little time, and the last phase of the malady appears without much delay and sometimes suddenly. In the short space of one night the patient becomes completely deaf.

The third, or paralytic, is the longest and most cruel of the three stages; for, with the exception of some fortunate cases, in which art has timely interfered to procure a certain degree of amelioration which may be temporary or durable, deafness persists indefinitely in spite of all remedial means. The most prominent feature of this third stage of the tobacco consumers' otitis is the more or less perfect abolition of the sense of hearing.

As both ears are commonly affected at the same time, deafness is at times complete, and both auditory nerves are attacked with paralysis to the same degree and nearly at the same time. It is rare, however, that one ear is not less affected than the other, which may be readily ascertained by passing a tuning-fork over the cranium, or simply by a watch; but although the lesion of one auditory nerve may seem to be less profound

than of the other, the affection on that account is not less serious on one side than on the other; for, even if the patient can still perceive the ticking of a large watch applied against the ear, or a tuning-fork pressed against the temple, conversation is nevertheless impossible; he is totally incapable of hearing an articulate sound.

This affection is invariably caused by the morbid condition of the constitution from the long-continued use of deleterious substances, particularly of tobacco and alcohol, under whatever form they may be introduced into the system.

The membranes of the ear present no apparent or real lesion; but on examination of the pharynx the tonsils are found to be small; there is a violet redness of the isthmus faucium, and an innumerable quantity of small, red, granular spots, as if incrusted upon the mucous tissue, impart to the membrane the characteristic aspect of shagreen. The nasal fossæ present the same appearance throughout. If the surgeon applies his own ear to that of the patient while the latter makes a strong expiration with both his mouth and nose closed, he will hear the column of air enter the drum without giving rise to mucous sound of cracklings; but the singing appears for the first time, or instantly increases, and this augmentation of morbid sound will thus continue for hours, or days, or until the case is cured, or lapses into the paralytic stage.

No obstruction can be detected in the Eustachian tube.

The treatment in the beginning consists in the application of cups to the mastoid apophyses, leeches to the anus, and in the use of drastic purgatives, alteratives, &c. Locally, emollient fumigations, to which acetic acid or acetate of ammonia has been added, are useful only in the first stage. In the second as well as in the third stage, electricity, whenever employed, has always proved frightfully injurious and hastened the accession of paralysis of the auditory nerve and irremedial deafness. But injections with strychnia, especially with veratria, have procured unhoped-for results.

CASE. *Smokers' Otitis.*—A wealthy foreigner, twenty-five years of age, greatly addicted to the use of alcohol and tobacco—he smoked daily twenty-five cigars at twenty-five centimes each—consulted us about a deafness, already very decided, which had reached the second stage above described.

He consented, although very reluctantly, to renounce the use of tobacco and alcoholics. Daily fumigations into the ear; cups were applied four times to the mastoid apophyses. Next, iron in conjunction with bitters and sulphate of quinia, and, finally, five injections with a weak solution of strychnia at intervals of three days, completed the cure.

Labyrinthic otitis in its relations with the vertigo and buzzings of the ear which accompany it, is the subject of Chapter XII. The author quotes certain passages from a memoir on the properties and functions of the nervous system, which was presented to the Academy of Sciences by M. Flourens in 1822, showing that the cerebrum is the organ of the intellectual faculties and the cerebellum of the motor powers of the animal, and that they are mutually independent.

A young woman died after suffering some days from pain in the head, vertigo, and insupportable buzzing of the ear. At the autopsy, the brain was found to be perfectly healthy, but, as in other analogous cases reported by Saissy and Dr. Triquet, the semicircular canals contained, instead of the liquor Cotunnii, a reddish plastic lymph of recent formation, and an inflammatory thickening of the nervous membrane which lines the different cavities of the internal ear.

This patient, during her menstrual flow, had been exposed at night to severe cold while riding in an uncovered vehicle. The next day vertiginous symptoms with deafness and buzzing appeared, and continued until death supervened.

If, on examination, the external and middle ear, the Eustachian tube and pharynx are found in a normal condition, and if there are no indications of gastric vertigo, cerebral congestion, or chloro-anæmia, the vertiginous symptoms, of which the patient complains, may be referred to a lesion of the labyrinth.

The prognosis is very serious, for, if the patient does not succumb during the acute stage, he is the victim in the chronic state to an obstinate and often irremediable deafness.

The treatment, in the acute stage, is by general bleeding, repeated according to the strength of the patient; scarified cups to the mastoid apophyses; leeches to the anus in men, or to the vulva or upper part of the thighs in women; ice to the head, fractional doses of calomel and drastic purgatives.

Saissy advises injections of tepid milk through the Eustachian tube into the middle ear to form there a kind of liquid cataplasm. Dr. Triquet has found fumigations with acetic acid diluted with water made to penetrate by the same way with the assistance of special apparatus, very serviceable, especially in combating the obstinate deafness of the chronic stage.

Anchylosis of the bones of the ear is the subject of Chapter XIII.

In complete anchylosis neither the air douche nor expiration produces any cracking. The ossicles are perfectly stiff, and their ossified joints remain immovable. Pain is almost always absent, buzzing, which is common to affections of the ear, is rarely wanting. In all cases the sense of hearing is very torpid. If, on gently disturbing the membrana at the point which corresponds to the malleus with a blunt probe, the patient has a fugitive sensation, which gives him a feeble and positive perception of some distant sound, the anchylosis is incomplete, and all hope is not lost.

Catarrh of the middle ear, in the chronic state, is distinguished from anchylosis, because in the former the membrana tympani preserves its concave form and loses its transparency. There are no crackings in the ear. They are replaced by a mucous sound.

Nervous deafness is easily distinguished by the complete absence of wax from the auditory canal, by the perfect transparency of the tympanic membrane, the integrity of its form and situation as well as of the ossicles, by the absence of mucous sounds and of crackings particularly. Besides, the erethism and buzzing are considerable, and the latter are most frequently isochronous with arterial pulsations. These differences, clearly ascertained, constitute the elements of differential diagnosis.

The local treatment recommended consists in fumigations with acetic acid or spiritus mindererus, at first to the external ear, and subsequently through the Eustachian tube into the drum. If there be inflammation of the drum still existing, cups and blisters to the mastoid, and where there are persistent granulations of the pharynx, cauterizations of the part cannot be too strongly advised. Dr. Triquet has derived advantage from the employment of liquid and gaseous sulphurous douches, as well as from injections of strychnia and veratria into the middle ear. Calomel and opium, iodide of potassium, arseniate of iron or soda internally, are useful accordingly as gout, rheumatism, or syphilis may be suspected to be associated with the cause of the anchylosis.

Chapter XIV. treats of the difficulties and accidents of catheterism of the Eustachian tubes. His remarks on this subject were given in our number for January, 1863, p. 224 *et seq.*

Dr. Triquet states, in Chapter XV., on the different substances which may be injected into the middle ear, that lesions of the cavity of the tympanum are the most frequent cause of nervous deafness, and that, in a certain proportion, cases may be remedied by medicated injections through the Eustachian tubes. In cases in which there is reason to believe that the mucous membrane lining the tubes or drum is in a mammillated condition, and especially in subjects whose deafness is consecutive upon typhoid fever, he injects a solution of caustic potassa into the middle ear. A few drops of a concentrated solution of caustic potassa are added to water until the mixture applied to the tongue shall produce a slight tickling. Some fifteen drops of this diluted solution are drawn into a syringe or pipette; then, having instilled into the catheter previously inserted into the tube, as many drops as may be considered proper, they are pushed into the middle ear by the assistance of a caoutchouc bellows or bag. In the beginning from four to five drops are injected every two days, and a little later, from eight to ten. When the tube and drum are filled with mucous sounds during the insufflation he stops. When the operation has succeeded well the patient experiences a sense of heat, with tingling in the ear. The pain is slight, and soon disappears; sometimes, however, it lasts till evening. If the pain is too sharp, it is prudent to operate only on one side the first day. If the tubes from the first fill with mucous sounds during efforts at expiration or during insufflation, it is best, during eight days, to practise injections of air, either dry or rendered stimulating by the addition of some drops of ether or chloroform. From one to seven potash injections usually produce a satisfactory result, but there is no objection to exceeding this number.

Douches of the vapour of ether or of chloroform may be utilized in cases in which essential paralysis of the auditory nerve is suspected. The vapour is administered by the aid of a gum-elastic bag, armed with a stopcock, into which some grammes of acetic ether or chloroform are poured—commencing with one gramme, increasing up to four or five at different times. The warmth of the hand is sufficient to volatilize the liquid; then attaching to the catheter previously introduced, the stopcock being open, a simple pressure of the fingers is sufficient to drive the vapour into the cavity of the ear.

If injections of ether or chloroform do not succeed, strychnia, nux vomica, veratria, &c., may be tried; for, in rebellious or desperate cases, all means which are not injurious are legitimate. The following formulæ for injections of strychnia are given:—

No. 1.—Strychnia 0.20 centigramme; ether. acetic. 16 grammes; aq. destillatæ 16 grammes.—M.

No. 2.—Strychniæ 0.30 centigramme; acid. acetic. 7 guttæ; aq. destillatæ 16 grammes.—M.

Of these perfectly transparent solutions three or four drops are injected into each tube. Employing the first formula, $\frac{1}{3}\frac{1}{5}$ of a grain is injected at a sitting into each tube, or $\frac{1}{1}\frac{1}{5}$ for the two ears; and of the second formula, $\frac{1}{1}\frac{1}{2}$ of a grain at a sitting is injected into each ear, or $\frac{1}{6}$ for both ears. Dr. Triquet says the effect of this medication has been remarkably happy once in twelve times.

With the same view he has employed injections of the alcoholic tincture and extract of nux vomica, but with no other result than the fact that they gave rise to general symptoms no more than strychnia.

*Injections of Veratria.* No. 1.—Water 20 parts; veratria 1 part; acetic acid 1 part. This solution has never been employed pure, but diluted with four, or five, or six times its volume of water. It is a very painful topical irritant.

No. 2.—Alcohol 12 parts; veratria 1 part. This solution is diluted with from two to twenty-four times its volume of water.

Veratria being an extremely irritating substance, it is necessary to commence with very dilute solutions. The weakest dose employed by Dr. Triquet is $\frac{1}{144}$ of a grain in two drops of water injected into the tube. This dose produces a moderate sensation. There is, however, a little irritation in the ear which receives the injection. The strongest dose which has been injected is $\frac{1}{12}$ of a grain in three drops of alcoholized water. The effect was very violent, and the pain in the ear tearing. Pure water was immediately injected to assuage the pain; but there was, after the seventh insufflation of the solution, an amelioration sufficient to authorize new applications of the remedy.

Dr. Triquet is of opinion that it is a grave error to suppose that all kinds of deafness can be cured by injections of atmospheric air.

Herpold, of Copenhagen, who first employed this therapeutic means towards the close of the last century, confined it to cases of torpidity of the tube or drum, caused by the presence of thick viscid, but still liquid mucosities. When this mucus, which has become hard, dry, and adherent, obstructs the tube and causes deafness, we must have recourse to fumigations, and to injections of tepid water, such as Guyot successfully tried on himself, for the first time, in 1724.

But in cases of chronic catarrh, with thickening of the membranes, medicated injections are to be preferred, such as the vapour of tar, gum benjamin, aloes, juniper, myrtle; injections of dilute solutions of potassa, strychnia, nux vomica, &c., all of which are successful in the particular cases to which they are adapted.

In the sixteenth chapter the author treats of "gourmes"—the *achor muciſluus* of Alibert, or *porrigo larvalis* of Willan—and puriform discharge from the ears.

Polypus of the ear is the subject of Chapter XVII. True polyps of the ear are seated in the drum, and have their origin or point of attachment on the petrous bone. In form, they sometimes resemble a split pea, and sometimes they entirely fill the auditory canal and project externally; but sometimes, too, they are so small and concealed at the bottom of the meatus that they escape sight. A more or less considerable discharge often accompanies, and always precedes their presence.

Dr. Triquet, after the removal of the tumour, applies liquid chloride of zinc as the most suitable caustic.

Polypus of the ear, he says, differs from polypus of other parts of the economy, and especially from that which occurs in the nostrils.

Polyps of the ear arise and are developed on the mucous membrane of the drum and on the petrous bone, in consequence of acute or chronic fluxes, which have destroyed or torn the membrana tympani. Dr. Triquet has never met a case in which this membrane was not either partially or wholly absent.

In the treatment, he prescribes the liquid chloride of zinc, which, acting instantly under the eye of the surgeon, enables him to limit its action at will. He discountenances the use of Canquoin's paste, because he believes it is dangerous to leave a fragment of it at the bottom of the ear during

twenty-four hours, since its destructive action may exceed the proposed limits. He states that he has not failed in a single one of more than sixty cases, in which he employed the liquid chloride of zinc.

Hemorrhage from the ear in hooping-cough is the subject of Chapter XVIII. There is always rupture of the membrana tympani in these cases, which are to be treated with cups or leeches to the mastoid region; calomel or scammony in appropriate doses, to act as derivative or antiphlogistic agents. The tympanum is to be set at rest, by plugging with cotton, and protecting the patient from noises. Cicatrization of the torn membrane may be favoured by the application, with a pencil, once or twice daily, of a mixture of ten centigrammes of tannin with ten grammes of glycerin, or a morsel of goldbeater's skin soaked in a drop of collodion, to the wounded membrane.

Chapter XIX. is devoted to the consideration of the advantages of cold water externally and of wine internally, in the treatment of cancer of the ear.

Ether in the treatment of deafness is the subject of the next chapter. Dr. Triquet tried this remedy in 110 cases, and was convinced not only of its little efficacy, but that it is dangerous. In twenty cases, the pain and redness were so great that a resort to antiphlogistic remedies was necessary for their relief.

Chapter XXI. treats of a hitherto undescribed variety of singing in the ear, which is not due to the condition of the brain or acoustic nerve, nor to the presence of ceruminous concretions in the auditory canal, obstructions of the Eustachian tube, nor to a collection of mucus, blood, or pus in the drum. In certain cases of this distressing affection, careful inspection of the membrana tympani shows simply a vascular redness of the manubrium and of the membrane surrounding it. At the same point, the membrane is agitated by minute intermittent oscillations, which are isochronous with the pulse.

Serious lesions of the drum and labyrinth may exist, giving rise to deafness, intolerable buzzings, &c., and often escape scrutiny, while the membrana tympani is entire. These lesions consist in reddish vascular thickenings, comparable in all respects, as the microscope shows, to the mammillated or papillated hypertrophies pulsating as above stated.

In cases where investigation by vision is impossible, Dr. Triquet thinks that the redness and vascularization about the manubrium of the malleus is pathognomonic. Whenever this sign is clearly ascertained, it may be asserted that the patient is tormented with buzzing, and that the cause of it is an abnormal development of the capillary plexus, consequent upon inflammation in different parts of the acoustic apparatus.

Dr. Triquet, in such cases, applies along the manubrium, by instillation, some drops of perchloride of iron, by means of a capillary tube or the syringe of Pravaz. He suggests compression, and even ligation, of the small arterial vessels which penetrate the drum and labyrinth.

Chapter XXII. treats of the facial paralysis which accompanies chronic purulent discharges from the ear; and Chapter XXIII., which closes the volume, embraces a report of several cases.

The preceding summary of Dr. Triquet's work indicates its scope and nature. He very frequently refers to his own *Practical Treatise on Diseases of the Ear*, to which this volume is made to serve as a complement and commentary in some respects. Nevertheless, it may be regarded in itself as a useful addition to the number of instructive books on aural diseases.

W. S. W. R.

# BIBLIOGRAPHICAL NOTICES.

ART. XIII.—*Transactions of American State Medical Societies.*

1. *Medical Communications with the Proceedings of the Seventy-second Annual Convention of the Connecticut Medical Society, held in New Haven,* May 25th and 26th, 1864. New Haven, 1864. 8vo. pp. 100.
2. *Communications of the Rhode Island Medical Society* for the years 1863–4. Providence, 1864. 8vo. pp. 42.

1. "INERT Practice in Disease" is the theme of the annual address of the President, Dr. E. K. HUNT, of New Haven. By inert practice, Dr. H. does not mean the use of medicinal agents in infinitesimal doses, nor of substances known to be destitute of any remedial powers, but rather the employment in the case of disease of the active and approved articles of the materia medica, in such quantities and at such intervals, as is shown by the experience of the vast majority of the intelligent, experienced, and unprejudiced members of the profession, must prevent their exerting any influence in staying the progress, or in any manner changing the character of morbid action in any of its stages.

This purely expectant or "do nothing" practice is based upon the supposition that all diseases have a definite and prescribed course, which cannot be checked or favourably modified by any of our therapeutic agents, and which, when completed, is followed by a cessation of all morbid phenomena, without the intervention of art. The supposition that diseases are in any correct sense self-limited, or that they are invariably or very generally conducted by the efforts of nature alone to a favourable termination, is shown to be false by every day's experience. When allowed to run an uncontrolled course, the more severe maladies, at least, are too often found to terminate in death, or to inflict an irreparable injury upon some important organ by which its functions are more or less impaired, and the general tone of the system in proportion permanently reduced.

That diseases exhibit what, with propriety, may be termed a regular course, and not unfrequently manifest a spontaneous tendency to a favourable solution is not to be denied. Hence, every judicious physician must, in the faithful performance of his duties, become, to some extent, the minister of nature. He will neither attempt nor desire to interfere with the regular progress or natural sequence of morbid phenomena, should he have failed in his effort to cut them short at their onset; he will, nevertheless, watch assiduously every case of disease placed under his care, and promptly have recourse to such measures as his experience approves to control any irregular, or undue action that may present, itself; and by guarding threatened organs from being drawn into diseased action or overwhelmed by undue determinations to them of blood, in this manner circumscribe morbid action within safe limits, reduce its violence, shorten its duration, and conduct it with greater certainty to a favourable termination. The field for active effort is very broad and extensive, and the judicious and skilful practitioner will find his services rewarded, when, by an intelligent exercise of his office, he has relieved pain; equalized the circulation and reduced it within its normal rhythm; regulated the secretions and excretions; removed and guarded against sources of irritation, and promoted the natural effort to throw off the materies morbi when any such exist, by finding the sufferings of his patient shortened, the integrity of all his organs secured, and his prompt restoration to health secured.

The views presented by Dr. Hunt, in the discourse before us, are, throughout, sound in principle, and ably sustained and enforced. Though devoid of novelty, it seems proper, that now, when the "ancient landmarks" in therapeutics, founded

upon the accumulated experience of the able practitioners of all times and countries, are being discarded by many physicians, these views should be reiterated, in order that they may assume their proper position as regulators of a rational and successful medical practice.

The second of the medical communications in the volume under notice, is on Scarlatina, by P. M. Hastings, M. D., of Hartford. The object of the author is to show that, whether we regard the virus of scarlatina as a foreign element circulating with the blood, or as a ferment generated in that fluid, and causing a disturbance in the proportions or vital condition of its constituents, it is the skin which is the principal organ in the elimination of that virus and its products, and that the treatment of scarlatina should be directed chiefly to the early restoration of the suspended functions of that organ.

As this view of the pathology of scarlatina, though mixed up with much that is hypothetical in the exposition given of it by our author, has an unquestionable substratum of truth, a brief sketch of the treatment best adapted, in his opinion, to aid the skin in the performance of its curative office in a disease which has so often baffled the best directed efforts of the most skilful physician, may not be without interest.

The leading indication, according to Dr. Hastings, is to watch carefully, and, if need be, to assist in the prompt and complete exfoliation of the epidermis, and consequent restoration of the normal functions of the skin. After the subsidence of the efflorescence, this indication is to be fulfilled by the use of the warm or vapour bath.

"A few years since," he remarks, "it was the practice to anoint the skin with the rind of bacon. One of the reasons assigned for the benefit derived, was the protection afforded to the surface rendered preternaturally sensitive by its congested condition. I believe, however, that the true explanation is to be found in the circumstance that the oil supplied, in some degree, the absence of the sebaceous secretion. Glycerin is a neater application, and far more effectual in bringing about the desired result. Mixed with Cologne water, in the proportion of one part glycerin to four or five parts of the former, it forms an agreeable wash and allays the troublesome itching so common at this period. It acts, to some extent, as a solvent of the dry epithelial scales, and, followed by friction, promotes their separation. If by these or similar means we succeed in restoring early the functions of the skin, the congestion of the throat or internal organs, so commonly encountered, will be greatly modified if not wholly relieved. Of course the process will produce general exhaustion and require the exhibition of internal stimulants and tonics."

The second indication, according to Dr. H., is to reduce the congested condition of the intestinal mucous membrane.

"Emetics of a mild character were formerly much used for freeing the stomach of its contents and determining the blood to the surface. Of late they are, to a great extent, neglected, and, I think, many times to the serious disadvantage of the patient. A mild cathartic is often advisable; it should generally be saline, as the drain produced by its action serves to relieve the capillaries of their fluid contents. When, as often happens, this congested state of the mucous membrane occurs before the functions of the skin are restored, as indicated by rapid swelling and ulceration of the throat, and engorgement of the lymphatics, we should urge the employment of active means to complete the exfoliation of the epidermis. The third, and last indication, has reference to the condition of the kidneys, which often present serious complications in the latter stages of scarlet fever. When the foregoing indications are not fulfilled before the second or third week of the disease, scanty urine, loaded with epithelial scales, exudative casts of the uriniferous tubes, and albumen present themselves, and we should watch with care the dropsical effusion in the pericardium, peritoneal cavity or cellular tissues, which often proves rapidly and unexpectedly fatal. This effusion, indeed, should be regarded as important in all stages of the disease. When the above described conditions are present, active measures for their removal should at once be employed. Small and frequently repeated doses of calomel are especially serviceable. If continued until a slight degree of inflammation of the bowels is produced, followed by mucous and shreddy discharges, by the removal

of the accumulated epithelium, it will prove an efficient means of restoring the mucous surface to its normal condition. During the use of the calomel, tonics and stimulants are generally demanded to sustain the vital powers. At the same time, our attention should be directed to the condition of the skin; the warm or vapour bath and inunction with glycerin, will materially aid in restoring its functions. An increase of sensible perspiration will be followed generally by an improvement in the urinary secretion. Diuretics will now prove of service in establishing the normal condition of the kidneys. Among these, the tincture of the chloride of iron is particularly valuable. I do not regard this class of agencies applicable until the stage of active congestion has passed off."

Although we are not inclined to indorse the foregoing plan of treatment as the one that is the best adapted to scarlatina as it presents itself in different epidemics, or in every case occurring in the same epidemic, we believe, nevertheless, that it presents many therapeutic directions which may with profit be adopted in nearly every case of the disease that we may be called upon to encounter.

The third communication is on the "Water Treatment of Scarlatina, especially by the wet sheet pack," by Dr. R. W. Mathewson, of Durham. As the title imports, the object of this communication is to point out the efficacy of the "wet sheet," applied by packing, in the treatment of scarlet fever. It is a very cautious and candidly written paper. After presenting a view of the large amount of evidence furnished by various imposing authorities in favour of the application of cold, in various ways, to the surface, in scarlatina, Dr. M. proceeds to show the superior efficacy exhibited by the same agent when applied by packing with the wet sheet. He had witnessed its use in twelve cases, and with the most satisfactory results. It seems to him to possess the advantage over the cold lotion and effusion, of securing a more certain and manageable reaction, and, also, by its depurative effects upon the emunctories of the surface. By its repellent effects upon the superficial capillaries, and the consequent reaction, it relieves the congestion of the surface—opens the constricted pores of the skin, and by keeping the cuticle moist, it favours absorption and exhalation, and thus promotes the efforts of the organism to discharge the materies morbi by the emunctories of the skin, thereby removing the source of morbid excitement and local complications.

The effects of the pack in modifying favourably the symptoms of scarlatina have been such as to remind Dr. M. where, in families, some were treated by it and some not, of the effects of vaccination in modifying the character of variola.

The earlier the pack is resorted to the more marked are its effects. It may be used as soon as the heat and dryness of the skin, and the frequency and fulness of the pulse become steadily raised above the normal standard, and with a freedom proportioned to the urgency of these symptoms. Dr. M. has usually applied the wet sheet during the height of the evening exacerbation. He has known the pulse to be reduced by it in frequency twenty to forty beats in a minute, the morbid excitement to be calmed, and quiet sleep induced in from ten to fifteen minutes.

The luxury of the pack is no trifling recommendation. Children have been known to cry for its repetition on a return of fever.

In none of the cases of scarlatina treated by him with the wet sheet, were any sequela observed by Dr. M., although these cases occurred during an epidemic in which complications were frequent.

The subject of the fourth memoir is "Enlargement of the Prostate Gland;" it is by Gordon W. Russell, M.D., of Hartford. Before describing the hypertrophied condition of the prostate body, which is so generally observed in individuals of advanced age as to render it in a good degree an especial disease of old men, Dr. R. presents a very rapid sketch of the chief ailments to which the prostate is liable, as simple inflammation from injury or other cause, malignant disease, calculous depositions in its substance, &c. The account given by Dr. R. of the hypertrophy of the prostate, its symptoms, march, diagnosis, and treatment, though very concise, is, nevertheless, accurate and instructive. It presents, however, nothing new in respect to either the pathology or therapeutics of an ailment which, considering its frequency and the evils it entails

upon the unfortunate patient, has received too little attention from the physician and surgeon.

The fifth memoir is on "Sulphuric Ether in Surgical Operations," by Dr. John E. Blake. The object of the writer would appear to be, chiefly, the mode and extent of exhibition of the ether for the prevention of suffering in surgical operations. The suggestions thrown out are all very good, but are without any particular novelty.

An interesting report is given by Dr. Geo. W. Burke, of Middletown, of a case of "scirrhus of the testis."

2. The first of the Rhode Island communications is from Dr. H. E. Tucker. It comprises the history of two *surgical cases*—the one of fracture of the skull, the other of traumatic tetanus.

The fracture of skull occurred in a labourer on the railroad. It was caused by a blow with a billet of wood in the hands of a fellow-workman. The condition of the patient, twenty-four hours after the injury was inflicted, was as follows: Contusion and tumefaction, without much laceration of scalp, over and about the parietal protuberance; occasional convulsive movements of the muscles of the left side of the face, recurring when pressure was made over the seat of injury, thus indicating the existence of fracture. There was no violent reaction, no coma nor other symptom of compression. It was concluded to do nothing more than prescribe a suitable diet and regimen. Three days subsequently, the convulsive movements persisting, it was determined to operate with the view of relieving the brain from any compression under which it might be found to labour. A free crucial incision through the scalp, showed that the skull, to the extent of a twenty-five cent piece, was depressed to the depth of over an inch, the depressed portion of bone being somewhat comminuted, but not sufficiently so as allow of its being removed by the forceps. The trephine, therefore, was applied above the fracture, and the depressed portion of skull raised by the elevator. The dura mater was perforated, and the thumb could be passed down to the first joint into a cavity in the cerebrum. For forty-eight hours succeeding the operation there occurred occasional attacks of severe convulsions. From this time there was a rapid improvement. The patient was confined very little to bed—was cheerful, had a good appetite, and exhibited no impairment of intellect. The wound of the scalp, one month after the operation, had in a great measure cicatrized, and all about the seat of injury had a favourable appearance. The probability, according to Dr. T., is that the patient will become epileptic.

"I have been thus particular," says Dr. T., "in giving an account of this case, from its furnishing a pretty good commentary on the doctrine I ventured, with some hesitation, to announce a year ago, namely, that in severe injuries of the head, perforation of the dura mater improves the prospect of relief and final recovery. I gave two cases, in which the degree of injury was about equal to that in the present one. The case in which the dura mater was perforated recovered; in the other, in which it was not, no reaction or consciousness occurred. I should not feel justified in opening the dura mater under such circumstances, but think the question of its propriety worthy of discussion."

In the latter part of September, 1862, Dr. T. saw, by the invitation of Dr. West, of Tiverton, a labourer on the railroad affected with tetanus. He was an athletic Irishman, who had been bitten by a dog. There was no peculiarity about the case, save that the patient was in a fair way to recover, which he finally did. His treatment was almost exclusively by opiates. The case occurred in a rather populous rural locality where, within the radius of a mile, five other cases of tetanus had occurred within twenty years.

The second communication is from the same gentleman, Dr. Turner, and describes an epidemic of "*typhoid dysentery*," which prevailed in New Port, R. I., during the months of August, September, and October, 1863. The rareness with which the prevalence of any severe epidemic is observed in that city has given to the one described by Dr. T. an unusual degree of interest.

The epidemic in its severest and most fatal form was confined to certain limited and well defined localities. In some streets scarcely a family escaped,

while in others, not far distant, scarcely a case occurred. At the Asylum, Coaster's Harbor, in a community of about sixty persons, from the 29th of August to the 19th of October, seven deaths from it occurred, or over eleven per cent. of the entire population. Of these deaths three were in patients less than two years of age, and the other four in those of five years and upwards—the elder being all chronic invalids. The average duration of sickness was eleven days; in one it lasted twenty-eight days, in another only four days.

The situation of Coaster's Harbor, as regards healthfulness, is unexceptionable—dry, elevated, and airy—many of its inmates, very aged persons, had dwelt there from forty to fifty years.

At Fort Adams, on the opposite side of the harbor to the asylum, and about equally distant from the city, was a garrison of about 150 men, living irregular lives, and indulging in various excesses in their frequent visits to the city. They resided in casemates, twenty-five, or over, sleeping in the same apartment, which, of necessity, was damper and less easily ventilated than would be the case if situated in detached wooden buildings. Among these 150 soldiers there were no deaths, nor a single case of dysentery during the whole autumnal season.

"According to my observation," says Dr. T., "the localities where the epidemic most prevailed were not those where it would have been most expected; a very different quarter of the city, and a very different class of people suffered, from that which suffered from the cholera in 1854. It was not, as with the latter, the poor and foreign population, surrounded by filth and bad drainage, privation and negligence, but the well-to-do people, in the central and well-kept streets, who were the victims. So far as I know, the wharves and poorer streets, which suffered the most from cholera, were unusually free from dysentery.

"The prevailing winds during the summer of 1863, instead of being as usual from the southwest, were from the east; and the weather was damp, and the heat oppressive, to a degree very seldom experienced in New Port. The declivity upon which most of the city is built fronts the west, and of course the southwest winds coming directly from the sea, and generally blowing hard for several hours every day, ventilate the streets and yards very thoroughly; whereas the town is almost entirely sheltered from easterly winds, so much so that during their prevalence the inhabitants are unconscious of any wind at all."

In many cases, in which the symptoms were not very severe, there was a singular persistency in the dysentery, and an obstinate resistance to the effect of remedies.

The average of deaths for August, September, and October, during the years 1861 and 1862, was within a fraction in 13 per month, whereas in 1863 it was 37, being an increase of 200 per cent. The average mortality of New Port, for the whole of the year 1863, vastly exceeded the usual ratio. In the three months during which the dysentery prevailed there was an excess of deaths over those in 1862 of 77, and over those in 1861 of 68; in the whole year the excess was 121 over 1862, and 123 over 1861. The average rate of the two years, 1861-62, was 10½ per month, while in 1863 it was precisely double, or 20½. While the percentage for the three dysentery months was 200; for the whole year it was 100.

During the months of March, April, and May, 1864, Dr. T. describes what he terms a very remarkable epidemic, which prevailed at Coaster's Harbor, chiefly though not exclusively affecting the pauper inmates. Of these last it destroyed eleven of those who survived the dysentery of the preceding autumn.

The disease is supposed to have originated from the introduction into the asylum of a family of coloured people, who had been living in filth and debauchery, without sufficient food, clothing, or fuel. Three of the family were labouring under typhus fever at the period of their introduction, but ultimately recovered. From the arrival of these persons into the asylum to the latter part of April, the disease attacked a large portion of those exposed to its contagion—Most of them being old or otherwise infirm, succumbed to the attack without the development of very aggravated symptoms; whilst the young and the vigorous generally recovered.

In most cases the disease was marked by a small and feeble pulse, somewhat, but not excessively accelerated; hot and dry skin; scanty and high-coloured

urine; costive bowels; dry tongue without sordes, which were also absent on the teeth and gums. There was in most cases a remarkable absence of grave cerebral symptoms: great depression was the leading characteristic in the generality of severe cases.

The sick in the different parts of the asylum were not separated from the well; and from this circumstance arose doubtless much of the mortality.

There were eleven deaths from the disease at the asylum; no resident of the city was known to have been attacked by it. A lady who came to see her brother, died soon after her return home to Providence, from the disease. It is not known that she communicated it to any one in the latter place.

The remaining communications consist of obituary notices of deceased members of the Society, and a report from a Committee on the Plan of the Rhode Island Hospital. The volume closes with the minutes of the semi-annual meeting of the Society for 1862, the annual and semi-annual meetings of 1863, and the annual meeting of 1864. D. F. C.

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ART. XIV.—*Reports of American Hospitals for the Insane:—*

1. *Of the New Hampshire State Hospital, for the fiscal year* 1862–63.
2. *Of the McLean Asylum, for the year* 1863.
3. *Of the State Hospital, Taunton, Mass., for the fiscal year* 1862–63.
4. *Of the State Hospital, Northampton, Mass., for the fiscal year* 1862–63.
5. *Of the Retreat, Hartford, Conn., for the fiscal year* 1863–64.
6. *Of the Frankford Asylum, for the fiscal year* 1863–64.
7. *Of the Mt. Hope Institution, for the year* 1863.
8. *Of the Central Ohio Asylum, for the fiscal year* 1862–63.
9. *Of the Wisconsin State Hospital, for the fiscal year* 1862–63.
10. *Of the Kentucky Eastern Asylum, for the fiscal year* 1862–63.
11. *Of the Kentucky Western Asylum, for the fiscal year* 1862–63.
12. *Of the Illinois State Hospital, for the two fiscal years* 1860–61 *and* 1861–62.
13. *Of the Indiana Hospital, for the two fiscal years* 1860–61 *and* 1861–62.

1. THE numerical record at the *New Hampshire Asylum for the Insane*, in the course of the fiscal year ending with the close of April, 1863, gives the subjoined results:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients at the beginning of the year | 88 | 100 | 188 |
| Admitted in course of the year | 45 | 56 | 101 |
| Whole number | 133 | 156 | 289 |
| Discharged, including deaths | 39 | 46 | 85 |
| Remaining at the end of the year | 94 | 110 | 204 |
| Of those discharged, there were cured | | | 30 |
| Died | 7 | 9 | 16 |

"Of the deaths, none have resulted from any disease having its origin during residence in the Asylum, but all have occurred in the progress of those forms of disease, in one stage or another, with which the mental disorder has been associated."

Dr. Bancroft experiences the same difficulty from the premature removal of patients susceptible of cure, or of further improvement, which is so frequently mentioned in the reports from other hospitals.

"Fear of the draft" is alleged as the cause of insanity in two of the patients admitted, and "enlistment of husband" in one.

2. The following numerical statistics are taken from the report for 1863 of the *McLean Asylum:—*

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital, January 1 . . . | 78 | 98 | 176 |
| Admitted in course of the year . . . | 51 | 43 | 94 |
| Whole number . . . . . | 129 | 141 | 270 |
| Discharged, including deaths . . . | 39 | 30 | 69 |
| Remaining at the end of the year . . | 90 | 111 | 201 |
| Of those discharged, there were cured . | 19 | 17 | 36 |
| Died . . . . . | 9 | 4 | 13 |

A considerable part of Dr. Tyler's report is devoted to an exposition of the safeguards, both legal and social, by which the personal rights of the individual are protected from invasion by any attempt unjustly to confine a person in a hospital for the insane. We extract one or two paragraphs, in which we think the doctor takes the right view of the subject:—

"If, under our present laws, and the existing management of our asylums for the insane, there is danger that persons, through the pretext of insanity, may be deprived of their personal liberty and rights, these laws and this management ought to be instantly and rigidly revised and reformed; and I know of no body of men who would step quicker or with more heart to the work than those who are engaged in the supervision and superintendence of these institutions. I would say here, that it seems evident that the real point to be scrutinized is this—the fitness for their position of the men who have these institutions in charge. Are the persons who stand to these institutions in the relation of "board of visitors," "trustees," and superintendents high-minded and conscientious men, sagacious and discreet, of strict integrity, and of kind heart? If not, here the reform should begin, as hereon depends the safety of the community; for if there is a position on the face of the earth for which the indispensable requisite is an unflinching purpose to do right, united to undoubted kindness and benevolence, that position is the guardianship of the insane—of those who cannot rightly and safely use their personal liberty, or think and act wisely for themselves. The relation is similar to and as sacred as that of parent to child, and he who holds it should possess such a head and heart as will always and under all difficulties endeavour to act discreetly, justly, tenderly, and as surely so whether there be a human law to direct him or not."

Further on, after asserting that "the only effectual way to guard against abuse from unjust admission and detention" is to make sure, by the most rigid scrutiny, that the guardians, officers, and attendants of the hospitals are trustworthy persons, the author of the report thus challenges such an investigation: "Let the beginning be made here, with the McLean Asylum; and the more careful and just the examination, the more will it be welcomed, that the public and the anxious friends of patients may no longer be harassed by indefinite rumours and innuendoes, which, though not believed, they have not the means to disprove."

3. The general statistics of the *Massachusetts State Lunatic Hospital*, at Taunton, for the fiscal year ending September 30, 1863, are as follows:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients at the beginning of the year . | 206 | 215 | 421 |
| Admitted in course of the year . . . | 89 | 107 | 196 |
| Whole number . . . . . | 295 | 322 | 617 |
| Discharged, including deaths . . . | 91 | 124 | 215 |
| Remaining at the end of the year . . | 204 | 198 | 402 |
| Of those discharged, there were cured . | 32 | 55 | 87 |
| Died . . . . . | 15 | 19 | 34 |

Died of phthisis, 11; general paralysis, 6; maniacal exhaustion, 4; marasmus, 3; diarrhœa, 2; fever, 2; apoplexy, chronic mania, dysentery, epilepsy, inanition, and scrofula, 1 each.

"It must be remembered," remarks Dr. Choate, "that of those taken sick among the insane, a much larger proportion die than of those sick with the same diseases among the sane. A healthy mind is a great aid to the restoration of a

sound physical constitution; and when the former is lost, the system easily succumbs to what would, under other circumstances, be a trivial disorder."

The following statistics illustrate the advantage of early treatment: "Seventy-five per cent. of all recoveries that have taken place the last five years have been in cases which had been insane less than three months before admission; 9 per cent. in cases which had been between three and six months insane; and 7 per cent. in cases which had been between six and twelve months insane; making an aggregate of 91 per cent. of all recoveries occurring in cases which had been insane less than one year before admission. Ten only, about 2 per cent., had been of longer duration than three years."

Touching the causes of mental disorder, the report says: "More than one-half the cases of the disease in men, in which the cause is known, are produced by a disregard of the known laws of health and morality. * * * And in females, although with them there is a greater susceptibility to the disease from wounded affections and from disturbance of the emotional and sentimental part of our nature, yet fully one-third of the known causes consist of various derangements of the physical system, most of which might have been avoided by a more correct knowledge and practice of the laws of nature."

We close our review of this report with an extract in which a very proper view is taken of the moral status of persons restored from insanity, and of the consideration to which they are entitled from those by whom they are surrounded:—

"There is absolutely no (other) class of our fellow-beings who need, and at the same time deserve, so much the soothing and sustaining influences of sympathy and confidence as the restored insane. Many of them return to the busy world with distrust, with a feeling that every one about them is looking upon them with jealousy and suspicion, and that they are deemed unfitted for responsibility and trust. They need all that the dictates of Christian benevolence and human philanthropy can do to restore them to confidence in themselves, and to the full development of their usefulness. Easily crushed by the frowns of the world, they can fully appreciate kind attentions, and, most of all, a renewal of confidence. A few recovered patients have been employed in this institution, some of them in positions of no inconsiderable responsibility, and I have never had reason to regret the confidence reposed in them. None of them have disappointed any reasonable expectations."

4. The next report claiming our attention is that of the Massachusetts *State Lunatic Hospital*, at Northampton, for the fiscal year 1862–63. It contains these statistics:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital, Sept. 30, 1862 . . | 147 | 185 | 332 |
| Admitted in course of the year . . . | 69 | 68 | 137 |
| Whole number . . . . . | 216 | 253 | 469 |
| Discharged, including deaths . . . | 49 | 37 | 86 |
| Remaining, Sept. 30, 1863 . . . . | 167 | 216 | 383 |
| Deaths . . . . . | 19 | 7 | 26 |

Died of phthisis, 8; marasmus, 8; general paralysis, 4; diarrhœa, meningitis, suicide, "acute exhaustion," softening of brain, and injury from fall, 1 each.

As in the next preceding report from the Northampton hospital, so in this, no mention is made of any cures in the course of the year. In our review of the former report, our views in respect to this omission were freely expressed, and there is consequently no necessity for saying anything upon the subject at this time.

Dr. Prince has attempted to introduce systematic labour, in the form of simple artisanship, among the patients of the hospital; and his account of the enterprise so well represents some of the advantages, as well as the disadvantages, difficulties, and dangers of any such scheme, that we venture to copy it entire:—

"During the last winter an experiment was made in the manufacture of baskets; and in the aspect of affording a suitable, light, and rather interesting occupation to a number of the patients, and in all its results, it was considered

quite a successful beginning. Pecuniarily it was a total failure. There was no money made, but there was not much lost. There was no outlay for tools or material. The materials were supplied, the simple apparatus necessary was loaned, the manufactured articles removed without cost, and the labour paid for. The amount received very nearly paid the wages of the men hired to superintend the work. No accident and nothing of an unpleasant nature occurred to detract from the satisfaction the results gave, excepting the necessary discharge of an overseer for what was considered an abuse of a patient, and the elopement of one patient from the room temporarily occupied as a workshop, and the threatening of one patient by another with a knife. The daily products of the labour of each patient varied, according to natural aptitude and mental condition, from one-twentieth to one-tenth of that of an ordinary hand working under the usual stimulus to labour. Our accommodations limited the number who could be employed at any one time to advantage, and the variable mental state of the men rendered frequent changes of hands necessary even in this small number. The same cause produced also a corresponding variation in the amount of labour performed on different days by the same patient; and in the quality of the work done on different days by the same individual, the same variation was evident, depending on some change in his mental condition not otherwise appreciable.

"Although but little over one thousand baskets were made, the experiment, with its small results, was considered quite interesting, as it seemed to epitomize the whole scheme of mechanical labour for the insane, and to stand as a sort of type of like experiments. In some respects it was exceptional.

"The branch of industry selected was one not requiring great mechanical skill. A few days sufficed for 'learning the trade.' The progress through the usually tedious stage of apprenticeship to the full dignity of 'journeymen' was rapid for most, although some lingered long by the way. The circumstances under which the experiment was tried undoubtedly conduced to the favourable pecuniary result; for there was no expenditure for materials nor tools, and the loss of material by waste and 'apprentice work' was borne by others. A further prosecution of the experiment would undoubtedly have produced better average results, inasmuch as the more expensive period of pupilage had passed, and production would have increased without any corresponding increase of expenditure.

"The experiment very well represents the prominent features of those carried on upon a much larger scale. There is the difficulty in securing overseers possessing the necessary qualifications of skill in the business, and the much more important moral qualities, the absence of which at once destroys the value of the experiment in its most important aspect as a hygienic measure. Such an overseer must, with the strictest honesty, possess the most imperturbable patience and good nature under provocations and annoyances to which he is sure to be subjected in his endeavours to extort unrequited labour in an unaccustomed direction from men who have little or no interest in this work, and who wish only to be left alone, who are often made nervous and irritable by any attempt to fix continuous attention upon anything at all taxing their mental powers, and on whom many of the chief incentives to useful labour are entirely inoperative.

"Two of the principal dangers attending these enterprises are also indicated in this short experience. The use by the insane of tools which may be suddenly converted into deadly weapons, is a danger not to be overlooked nor underestimated, but constantly and vigilantly guarded against; and, with the greatest care and watchfulness, accidents from this source must be expected to occur occasionally in the future as they have in the past. It is a danger that constantly limits the number which can be safely and advantageously employed, and fearfully increases the responsibility of those having the direction of these labours. The elopement of one of the men exposes another difficulty of greater or less weight according to the security of the work-rooms and the vigilance of the overseers. But in the greater freedom from restraint, and the frequent passing from place to place of those employed, the liability to loss by elopement cannot be lost sight of.

"The manufacture of mats has been pursued for some years as a means of occupation in stormy weather, for the hands usually employed on the farm, and

has well answered its purposes of pleasant diversion and the supply of a constantly recurring want of the house.

"The manufacture of palm-leaf hats was attempted, and persevered in for a length of time sufficient to show that it is a branch of industry not well suited to our patients, or rather to the class of patients for whose improvement employment is most needed. It requires considerable skill beyond the easy acquisition of the demented, a fixedness of the attention not easily secured, together with arithmetical combinations quite puzzling to the impaired and restless minds of those attempting them."

5. At the *Hartford Retreat for the Insane* the medical history of the official year ending with the close of March, 1864, furnishes the following numbers:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital, March 31, 1863 . . | 112 | 119 | 231 |
| Admitted in the course of the year . . | 60 | 83 | 143 |
| Whole number . . . . . | 172 | 202 | 374 |
| Discharged, including deaths . . . | 55 | 88 | 143 |
| Remaining, March 31, 1864 . . . | 117 | 114 | 231 |
| Of those discharged, there were cured . | 26 | 46 | 72 |
| Died . . . . . | 11 | 10 | 21 |

Died from exhaustion, 4; general paralysis, 3; old age, 2; general debility, 2; exhaustion of acute mania, 2; epilepsy, 2; phthisis, 2; suppressed eruption, diarrhœa, apoplexy, disease of the bowels, and disease of the brain, 1 each.

"During the year the house has at all times been full, generally crowded beyond its comfortable capacity."

In his remarks upon "improvements," Dr. Butler says: "The bowling-alley is a favourite and useful resort for our ladies, and will become more so when inclosed within the airing court. * * * Our billiard-room is a great and apparently almost indispensable relief and comfort to our convalescent gentlemen. It is in constant use. * * * But the greatest gain of all has been from the improvement of our grounds; and from these, in our summer months, we are deriving the greatest help."

6. At the *Frankford Asylum*, in the course of the fiscal year ending with the close of February, 1864, the principal numerical results of the medical history were as follows:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients at the beginning of the year . . | | | 56 |
| Admitted in course of the year . . . | | | 22 |
| Whole number . . . . . | 33 | 45 | 78 |
| Discharged, including deaths . . . | 7 | 8 | 15 |
| Remaining at the end of the year . . . | 26 | 37 | 63 |
| Of those discharged, there were cured . . | 2 | 4 | 6 |
| Died . . . . . | 2 | 0 | 2 |

Died of chronic enteritis, 1; paralysis of the insane, 1.

"With one exception, there has scarcely been a case of serious illness among those who have resided for more than a year in the asylum."

Dr. Worthington, like his peers, has "had to regret the removal of patients while undergoing a course of treatment, and before sufficient time had been allowed to test the efficacy of the remedies employed."

We copy two passages from the remarks upon the causes of mental alienation, the first of them relating to what is called a "constitutional tendency" to the disorder:—

"It is not designed at present to enter into a consideration of this constitutional tendency, further than to say that it appears to be generally inherited—not always from an *insane* ancestry, but more frequently perhaps from one in which the tendency has not yet reached that point of development. That this view is correct, is shown in part by the history of a considerable number of cases which have been under care in the asylum, where brothers and sisters in

several different families in which it had not been known to exist previously were attacked by the disease, while the cases that can be traced to a direct hereditary origin are of comparatively rare occurrence. The peculiar organization which constitutes this tendency may be regarded as a deviation from the normal type of the species, which, like other deviations of the same kind, according to a law which holds good in the lower animals as well as in man, tends to revert to the original type; or, after a few generations of progressive deterioration, to become extinct. The tendency of these perverted types to die out and become lost, is shown in this particular class by the fact that a large majority of the insane as represented in asylum statistics are unmarried. On this view of the subject, the hereditary increase of insanity is less an evil than has been generally supposed."

"Several instances have come under notice where persons engaged in nursing sick relatives, have, by neglecting the proper and necessary care for their own health, become the subjects of serious illness, terminating in insanity. Persons of delicate constitutions especially, require abundance of sleep, when placed in situations where the mind is subjected to any severe strain; and even robust men have been known to break down and be attacked with fatal disease of the brain, apparently from no other cause than denying themselves sufficient sleep, in order that they might have more time to devote to their business."

7. The subjoined statistics are gathered from the report for 1863, of the *Mount Hope Institution*:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital January 1st | 102 | 126 | 228 |
| Admitted in the course of the year | 158 | 51 | 209 |
| Whole number | 260 | 177 | 437 |
| Discharged, including deaths | 144 | 63 | 207 |
| Remaining December 31st | 112 | 116 | 228[1] |
| Of the discharged, there were cured | 32 | 27 | 59 |
| Died | 13 | 10 | 23 |

Of the patients admitted, the origin of the mental disorder of 17 is attributed to "excitement of the times."

"On analyzing the presumed causes of the attacks of insanity that have been presented before us this year, it would appear that a large proportion of the cases have had their origin in some form of mental shock; or the mental disturbance has resulted from the wearing effects of long-continued anxiety and trouble. * * * * The operation of these causes is so obvious, and so palpable, as to be at once perceived even by the least observant.

"The mind of one of our female patients became suddenly affected on hearing that one of her children had fallen into a well and was drowned. Another female became suddenly deranged in consequence of witnessing the horrible spectacle of a mass of mangled bodies being thrown into a heap and burned, after one of the battles of the Potomac. Another lost her reason in consequence of the appearance of a body of soldiers at her house at night, who greatly terrified her, and threatened to shoot her if she did not immediately disclose where her husband was concealed.

"But causes of this nature, which operate by producing a powerful mental shock, constitute by no means the most frequent. Besides these, and in addition to those who are rendered insane by past and present calamities, large numbers fall victims to this disease purely by the *anticipation of evil.* * * * * There are few men or women who have not dreaded a hundred evils which have never come upon them; and every physician must have observed the miserable consequences of an over-anxious care for the future. Indeed, we believe that the dread of future evil is, on the whole, more injurious to both mind and body than even the influence of present care and sorrow.

"Samuel W., aged 54, was a carpenter, and an industrious, honest, and up-

[1] These numbers are extracted from the report. According to the figures preceding them, they should be 116—114—230.

right man. Up to the 19th of April, 1861, he had manifested no symptoms of mental disorder, had been of strictly temperate habits, and had experienced no great trouble or cause for sorrow. * * * The events of the 19th of April made a powerful impression upon his mind. He indulged in the most fearful forebodings as to the future—imagined the city would be destroyed, and all involved in ruin and desolation. He became indifferent in regard to his employment, no longer sought work, ceased to take an interest in his domestic concerns, neglected his family, and passed his time in brooding over imaginary troubles and evils. He began to sleep less soundly, his mind being tortured with vague fears and groundless apprehensions. His whole character became changed, his feelings and affections completely perverted, and well marked symptoms of insanity were at length fully developed."

8. At the *Central Ohio Lunatic Asylum*, in the fiscal year ending October 31, 1863, those general facts which we are accustomed to extract from the reports of each hospital were as follows :—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients at the beginning of the year . . | 140 | 120 | 260 |
| Admitted in the course of the year . . | 69 | 79 | 148 |
| Whole number . . . . . | 209 | 199 | 408 |
| Discharged, including deaths . . . | 83 | 73 | 156 |
| Remaining at the end of the year . . . | 126 | 126 | 252 |
| Of the discharged, there were cured . . | 51 | 49 | 100 |
| Died . . . . . | 14 | 6 | 20 |

In February, smallpox appeared in the hospital, and, "notwithstanding the most thorough prophylactic measures," prevailed until July, proving fatal in five cases. A gymnasium in the rear grounds was converted into a smallpox hospital, and surrounded with a paling fence. Throughout the whole period, the disease was epidemic in the region in which the hospital is situated.

The attentive reader cannot fail to observe the very large number, both actual and relative, of cases which are discharged cured from this hospital. The actual number, the past year, as will be seen above, is 100. "The annual average, for seven years past, has been 102. The relative number, in comparison with all who were discharged is, for the year covered by the report, equal to 64.1 per cent. This proportion of cures has few, if any parallels in the history of other hospitals; and, inasmuch as it continues for several successive years, there must be some cause for it, the operation of which is neither casual nor transitory.

The principal cause lies, undoubtedly, in the nature of that part of the statutory laws of Ohio which relate to the insane and the institutions intended for their care and remedial treatment. Dr. Hills, though an able superintendent, does not claim the possession of such skill as would enable him, in cases of insanity in general, to effect a cure in from 25 to 50 per cent. more than are effected by the superintendents of other hospitals. He frankly attributes the results to the operation of the laws just mentioned.

Let us look for a moment to the conditions and circumstances under and amid which the benevolent institutions of Ohio exist and are conducted.

The constitution of the State declares as follows: "Institutions for the benefit of the insane, blind, and deaf and dumb, shall always be fostered and supported by the State."

The statute laws provide that, 1st. "All persons who have been, or may hereafter be, admitted into either of the asylums belonging to the State, shall be maintained therein at the expense of the State." 2d. "Selections shall be made, preferring first, recent cases; second, chronic cases, presenting the most favourable prospect of recovery." 3d. "Incurable and harmless patients may be discharged, whenever such discharge is necessary to make room for a recent case." And 4th. "No person who has been returned from an asylum as incurable, or who has been insane more than two years last past," shall be admitted unless there be abundant room.

We have heretofore mentioned, in terms of commendation, the nobility of

spirit manifested by the Legislature of Ohio, when, without a precedent among the sister States, it manfully stood up and took the initiative in casting the burthen of the pecuniary responsibility, for the treatment of the insane in her hospitals, upon the treasury of the commonwealth. Under the law by which this was done, and the other provisions just quoted, the "immediate and ultimate results," according to Dr. Hills, in his report for 1860, when compared with the operation of the laws in most of the other States, are:—

"1st. Greater promptitude in getting cases into the asylum in their early or curative stage.

"2d. Less disposition to remove them before convalescence is complete.

"3d. As a consequence of the first, a less amount of injudicious treatment before admission, tending to prevent recovery.

"4th. The treatment of a greater number of cases in a given period of time, with the same asylum capacity.

"5th. Thereby more fully meeting the demands for the care of the insane.

"6th. Removing entirely the danger of cases passing from the recent and curable stage to the chronic and incurable, while waiting for their turn, an indefinite period of time, for room in the asylum.

"7th. In so far as a greater number of recoveries result in a given time, diminishing the number of cases of insanity in the community.

"8th. By diminishing the average duration of cases of insanity, as well as their number, diminishing the total amount of expenditure in maintaining the insane.

"9th. Obtaining a great moral power and influence upon remaining inmates, from the prestige of success."

But Dr. Hills has failed to mention one of the most obvious effects of these laws—and perhaps because it is so obvious—which contributes more largely than any other towards the increase of the percentage of recoveries. And this is, that epileptics, idiots, paralytics, cases of senile insanity, and chronic dementia, classes which constitute a very considerable part of the admissions into some hospitals, are, or may be, kept out of those in Ohio. Indeed, if there be within the State a sufficient number of curable cases to fill the hospitals, and to keep them filled, no incurable need ever find a place within their walls. Certainly, under such conditions, the number of cures, both positive and relative, ought to be large.

We had long since the intention, at some time, to explain more fully than we ever yet have done the practical workings of these laws. The work now comes to our hands performed by another, and we gladly avail ourselves of the opportunity to give it a place. The following is copied from the report before us, but originally appeared in the report for 1862 of the trustees of the hospital at Worcester, Mass.

"In Ohio, 73.7 per cent.; in Indiana" (where the hospital is likewise directly supported by the State), "70 per cent.; and in Massachusetts" (where the hospitals are not so supported), "64.8 per cent., in their State hospitals, were sent in the first year after they were attacked. As a necessary consequence, those States which sent the largest proportion in the early and curable stage, received back the largest proportion in health and power of usefulness, and had the smallest proportion left in confirmed, immovable lunacy, to be supported for life by their estates or the public treasuries.

"In the three public hospitals of Ohio 54.59 per cent. of all that were sent to them were restored, and 43.40 remained insane for life. In Massachusetts 44.05 per cent. were restored, and 55.95 per cent. remained a life burthen upon the people. The proportion of patients restored out of all admitted to the hospitals is 23 per cent. greater in Ohio than in Massachusetts. Now, no one will suppose that the hospitals in Ohio are managed with more skill than those of this State (Massachusetts). But this difference in the results of their labours is due to the difference in the proportion of patients sent in the curable stage of their disorder.

"Looking at this matter merely as a question of political economy, in its bearing upon the remote as well as present means and prosperity of the State, it is plain that there are important advantages on the side of the free and open (Ohio)

system of managing the public charitable institutions. They send back to society a larger proportion of workers, producers, self-supporters and contributors to the public treasury, and leave a smaller proportion of the useless and burdensome class. Inasmuch as they have a better or more available material to work upon, they produce a more successful result, and convert a larger proportion of costly men and women into profitable members of the body politic. The Worcester and Taunton hospitals have received 8,490 patients, and restored 3,740 to health. If these could have been sent at as early a stage of their disease, and as large a proportion restored as in Ohio, then 23 per cent., or 860 would have been added to the useful and self-sustaining citizens sent back to the world, and as many taken from the class that has been or must be supported and cared for through life."

It is very clear that, in the present condition of things, when perhaps no State has hospital accommodations for one-half the insane within its jurisdiction, the Ohio system effects the greatest amount of good, both pecuniary and humanitarian. We have hoped, in years past, that the benevolent enterprise of erecting hospitals would be pursued with an ever increasing zeal, until every person with disordered mental powers would be able to find a place in an institution especially prepared for the benefit of those who are so afflicted. But the great national convulsion which began in 1861 has, for the present, destroyed that hope. Under these circumstances, we freely acknowledge that the Ohio system appears to us to be the best which has hitherto been devised in America.

In Ohio, as in most of the States, many incurable insane are confined in county poor-houses—called, in Ohio, "infirmaries;" while some are found in jails and others are "farmed out," or "sold to the lowest bidder for care and keeping." In view of the large number of this class in the State; considering the miserable condition in which many of them are known to be, and taking it for granted that a sufficient number of hospitals for their accommodation, similar to those now in operation, will never be built, Dr. Hills proposes a plan for the suitable protection and care of them. He would have the State purchase a farm of about 500 acres, centrally situated, and with an appropriation of from $30,000 to $40,000, erect thereupon two buildings, one for either sex, and each of sufficient capacity for 100 patients. These should be immediately put in operation. On each successive year he would add two more buildings of like character and dimensions, until ten should be erected, giving accommodations to 1000 patients. The whole establishment should be organized and conducted similarly to the existing hospitals.

Dr. Hills remarks that, "after a full examination of the subject, and observation in the various institutions in this country and many of those in the old world," he is satisfied that the institution, by "judicious management, would develop an almost self-supporting power."

We have always opposed asylums for the incurable insane, believing the plan now pursued by our hospitals, generally, as far the best. But as such hospitals for all the insane are now apparently out of the question, we should rejoice to see the plan of Dr. Hills put upon trial.

9. The subjoined numbers are taken from the report of the *Hospital for the Insane* of the State of Wisconsin, for the fiscal year ending September 30th, 1863.

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital Sept. 30th, 1862 . . | 67 | 64 | 131 |
| Admitted in the course of the year . . | 62 | 61 | 123 |
| Whole number . . . . . | 129 | 125 | 254 |
| Discharged, including deaths . . . . | 44 | 22 | 66 |
| Remaining, Sept. 30th, 1863 . . . . | 85 | 103 | 188 |
| Of those discharged, there were cured . . | | | 37 |
| Died . . . . . | | | 9 |

"In the treatment of patients," says Dr. Clement, "we have still kept in mind the importance of means mentioned in former reports. To the billiard table, stage for tableaux, &c., which we had before, we have added a bagatelle board,

Dr. Lewis's pangymnasticon for gymnastic exercises, Lewis's spirometer and blow gun, and battledoor. Backgammon and dominoes are kept up, and various kinds of music, also dancing. We have obtained a covered carriage which holds nine persons, and this has been a source of great pleasure and improvement to our female patients. Occasional pic-nics have been given, with chowders for nearly the entire number of patients, and with music and dancing. A few suitable patients have enjoyed fishing, rowing, and swimming in the lake."

10. The report for the fiscal year ending Sept. 30th, 1863, of the *Kentucky Eastern Lunatic Asylum*, contains the following general summary:—

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients at the beginning of the year . . | 137 | 94 | 231 |
| Admitted in course of the year . . . | 23 | 18 | 41 |
| Whole number . . . . . | 160 | 112 | 272 |
| Discharged, including deaths . . . | 27 | 14 | 41 |
| Remaining at the end of the year . . . | 133 | 98 | 231 |
| Of those discharged, there were cured . . | 15 | 6 | 21 |
| Died . . . . . | 10 | 5 | 15 |

Died of phthisis pulmonalis, 5; exhaustion, 5; *paralysie générale*, 2; epilepsy, 1; disease of heart, 1; pneumonia, 1.

"Of the 41 cases of admission, only six were of less than one year's standing."

"There are comparatively few of the patients in this institution," says Dr. Chipley, "who are not more or less employed. Agriculture and the care of the pleasure grounds engross the attention of the largest number. Others are occupied in the carpenter's shop, tin shop, in making or mending shoes, assisting in the wards, in kitchen, in repairing brick-work or plastering, glazing, painting, sawing wood, carting coal, &c., in a word, in all manner of employment that we find it practicable to give. It matters not how little one is capable of doing, the execution of that little is his advantage; he goes to the table with an improved appetite, and to bed with an increased disposition to sleep; and if nothing more is accomplished, these are blessings to the insane."

11. It appears by the report of the *Kentucky Western Lunatic Asylum*, for the official year terminating with the close of October, 1863, that Dr. Montgomery, the late superintendent, has retired from that hospital, and has been succeeded by Dr. James Rodman.

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital Nov. 1, 1862 . . . | 58 | 50 | 108 |
| Admitted in course of the year . . . | 14 | 6 | 20 |
| Whole number . . . . . | 72 | 56 | 128 |
| Discharged, including deaths . . . | 12 | 2 | 14 |
| Remaining, Oct. 31, 1863 . . . . | 60 | 54 | 114 |
| Of those discharged, there were cured . . | 6 | 2 | 8 |
| Died . . . . . | 3 | 0 | 3 |

It will be remembered that the buildings of this hospital were consumed by fire, a few years ago. A new edifice is in progress, and "there are already applications enough to fill it, when completed, to its utmost capacity; and every week adds to their number. * * * Before the expiration of another year the asylum building will be completed."

The admissions of the past year consisted, almost without exception, of chronic cases.

It appears that there are many epileptics in the two Kentucky hospitals, and Dr. Rodman says: "The erection of a hospital for epileptics exclusively, is well worthy the attention of the General Assembly."

12. The results, in a medical point of view, of the operations of the *Illinois State Hospital for the Insane*, for the two fiscal years terminating on the 31st of November, 1862, are thus represented.

| | Total. |
|---|---|
| Patients in hospital Dec. 1, 1860 | 231 |
| Admitted in course of two years | 386 |
| Whole number | 617 |
| Discharged, including deaths | 315 |
| Remaining, Nov. 30, 1862 | 302 |
| Of those discharged, there were cured | 165 |
| Died | 34 |

Died from exhaustion of acute mania, 11; exhaustion of chronic mania, 8; consumption, 5; fever, 2; paralysis, 2; epilepsy, 2; suicide, 2; apoplexy, 1; fall from window, in attempt to escape, 1.

In his remarks upon the influence of the present war in producing insanity, Dr. McFarland says: "The most interesting part of the inquiry is, whether the sufferings and privations of the field itself, or the sympathies and bereavements of those left at home, have contributed most to our results? A first thought would assign as much of the weight of the common affliction to the latter, at least, as to the former. Yet it is strikingly evident that the reverse is true. The hardships and sufferings of warfare have made themselves strikingly felt, while the excitements, anxieties, and sometimes overwhelming bereavements of those whose all has been pledged, have hardly made a trace on our records. It proves that the same devotion which gave fathers, brothers, and sons to the chances of the conflict, has so nerved all hearts to the consequences of the sacrifice, that even the terrible disclosures of the battle-field bulletins have carried few beyond the bounds of temperate grief. Indeed, it may be claimed that the 'war excitement'—limiting the phrase to its true meaning—has been healthful in its operation upon the public mind."

These remarks appear to have been suggested by the figures in the subjoined table, showing the number of patients admitted, in the two years, whose insanity appeared to have its origin in circumstances connected with the war.

| | |
|---|---|
| Soldiers brought from camps, hospitals, &c. | 14 |
| Friends made insane from sympathy, anxiety, &c. | 2 |
| Cases produced by war excitement, generally | 7 |
| Total | 23 |

In treating of labour and its results in hospitals for the insane, the report says: "It must be considered that, in foreign institutions, where the success of a system of skilled labour is so much vaunted, those engaged in it look to the institution, where they receive all they can expect to obtain anywhere—a bare subsistence—as a desirable haven, and confine all their aspirations to its limits. Lacking the mental elasticity which characterizes those reared under democratic institutions, they soon settle into a mental level, too low to be reached by the incentives of hope and ambition, and automatically follow, under an unexpensive supervision, those trades to which they have been accustomed. The kind of labour there pursued with a profit, would be a bill of expense if attempted here; and mental occupation fully as valuable can be obtained otherwise."

In regard to the popular idea of insanity, Dr. McF. says: "Society has yet a duty to learn towards the lunatic. His state has no kindred to crime, and should be regarded without aversion. He is not a fractional part as dangerous as he even appears. A few kind words, looks of confidence and sympathy, or a seat at the table, will smooth away the most dangerous features worn by any. It is mostly the neglect of society which has made him dangerous, and when this truth is fully learned, he will be regarded with far different eyes than at present."

This is somewhat hyperbolical. Some of the insane *are*, under any circumstances, dangerous.

13. The report of the *Indiana Hospital for the Insane* for the fiscal year ending Oct. 31st, 1860, is signed by Dr. Athon, who had for several years occupied the place of superintendent; but he had already resigned the office, and Dr. James H. Woodburn had been appointed as his successor.

| | Men. | Women. | Total |
|---|---|---|---|
| Patients in hospital Oct. 31, 1860 | 151 | 146 | 297 |
| Admitted in course of the year | 111 | 103 | 214 |
| Whole number | 262 | 249 | 511 |
| Discharged, including deaths | 106 | 105 | 211 |
| Remaining, Oct. 31, 1861 | 156 | 144 | 300 |
| Of those discharged, there were cured | 57 | 57 | 114 |
| Died | 11 | 16 | 27 |

Died of maniacal exhaustion, 9; phthisis, 8; general paralysis, 4; suicide, carcinoma, tabes mesenterica, œsophagitis, chronic diarrhœa, and "persistent epilepsy," 1 each.

"War excitement" is the alleged cause of the mental disorder of 15 of the patients admitted in course of the year. Three of them were females.

"There has been no prevailing disease among the patients, though the list of mortality is greater than usual. This is attributable to the weakened physical condition in which a large number of patients are admitted to the hospital. The practice of reducing the insane in order to assuage their malady, still prevails to a very injurious extent in every part of the country. The majority of cases require the opposite treatment."

We proceed to Dr. Woodburn's report, for 1862.

| | Men. | Women. | Total. |
|---|---|---|---|
| Patients in hospital Oct. 31, 1861 | 154 | 146 | 300 |
| Admitted in course of the year | 103 | 97 | 200 |
| Whole number | 257 | 243 | 500 |
| Discharged, including deaths | 107 | 95 | 202 |
| Remaining, Oct. 31, 1862 | 150 | 148 | 298 |
| Of those discharged, there were cured | 63 | 51 | 114 |
| Died | 7 | 7 | 14 |

Died from exhaustion of chronic mania, 5; exhaustion of acute mania, 3; pulmonary consumption, 2; erysipelas, general paralysis, pneumonia, and suicide, 1 each.

"The library has been enlarged from about one hundred volumes to nearly four hundred."

Dr. Woodburn's report relates chiefly to the domestic concerns of the hospital.

P. E.

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Art. XV.—*Sanitary Commission United States Army.*

1. *The Sanitary Commission of the United States Army; a Succinct Narrative of its Works and Purposes.* 8vo. pp. 318. New York: Published for the benefit of the United States Sanitary Commission, 1864.
2. *The Western Sanitary Commission; a Sketch of its Origin, History, Labours for the Sick and Wounded of the Western Armies, and Aid given to Freedmen and Union Refugees, with Incidents of Hospital Life.* 8vo. pp. 144. St. Louis, Mo.: Published for the Mississippi Valley Sanitary Fair, 1864.

The leading object of these Sanitary Commissions is one of the highest importance, as well in the amelioration of individual suffering among our soldiers, by ministering as far as may be to their well-being and comfort, as in increasing the vigour and efficiency, and preserving the numerical force of our armies, by suggesting, and aiding to carry out, under the proper authorities, such sanitary regulations and reforms as may be demanded to insure the health and strength of the soldier in the camp, the barrack, and the field, and the prompt and entire recovery of the sick and wounded in the several military hospitals.

The efficient manner in which this object has been accomplished throughout the immense field over which the labours of our Sanitary Commissions extend; the large amount of money they have been enabled to raise through voluntary contributions from the citizens; the careful and judicious manner in which this

money has been, in general, expended, and the incalculable amount of good, both physical and moral, which has been accomplished through their instrumentality, will render the history of the Sanitary Commissions of the United States a stupendous and enduring monument commemorative of the liberality and active philanthropy of our age and people.

"The first organized attempt to mitigate the horrors of war, to prevent disease and save the lives of those engaged in military service, by sanitary measures and a more careful nursing of the sick and wounded, was made by a commission appointed by the British Government during the Crimean War, to inquire into the terrible mortality from disease that attended the British army at Sebastopol, and to apply the needed remedies. It was as a part of this great work that the heroic young Englishwoman, Florence Nightingale, with her army of nurses went to the Crimea to care for the sick and wounded soldier, to minister in hospitals, and to alleviate suffering and pain, with a self-sacrifice and devotion that have made her name a household word wherever the English language is spoken. In the armies of France the Sisters of Charity had rendered similar services, and even ministered to the wounded on the battle-field, but their labours were a work of religious charity and not an organized sanitary movement.

"The experience of armies having shown that not less than five soldiers die of disease to every one killed in battle, it became a problem whether this immense loss could not be greatly diminished by sanitary means, and the military strength of a people be proportionally increased by a greater economy of life, and the superior health, vigour, and aggressive power of its armies. To this consideration was also added the religious duty of a people to minister to the comfort and health of men engaged in so perilous a service, and who leave their homes and families and kindred to encounter sickness, wounds, and death for the sake of country and liberty.

"The result of the inquiries of the British Commission and of the researches of medical science has clearly established the fact that the 'efficiency of an army must ever depend upon the state of health of the corps which compose it,' and that 'the history of war can no longer be confined to bare details of the plans of battles and the manœuvres of armies,' but that 'we must refer to other elements, and principally to the sanitary condition of troops, as the causes of our victories, or the reasons for our disasters.'"

The first of the publications before us comprises a succinct narrative of the origin, purposes, progress, and present condition, with the methods and departments of labour of the United States Sanitary Commission. It presents in connected outlines, and in reviews, and condensed abstracts of current reports, a concise record of the objects and spirit of the Commission and of the manner in which its practical operations have succeeded in identifying the cause of humanity with the strength and efficiency of our armies.

The narrative is full of matter of the deepest interest to every friend of humanity, who, while he recognizes the importance of the contest in a national and political point of view, would, nevertheless, look even beyond it, and by every means within his power extend and augment "the popular appreciation of the sacredness of human life and human sympathies, which shall yet elevate the brotherhood of States and Nations above the very causes of war."

The second of the publications whose title stands at the commencement of the present notice, performs for the Western Sanitary Commission—the setting forth of the organization and varied operations of this important co-ordinate branch of the National Commission—the same office the first does for the United States Sanitary Commission. D. F. C.

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ART. XVI.—*First Outlines of a Dictionary of the Solubilities of Chemical Substances.* By FRANK H. STORER. Part III. (Conclusion.) 8vo. pp. 256. Cambridge: Sever & Francis.

THE two preceding parts of Mr. Storer's able Dictionary have been reviewed in these pages at the time of their appearance, and in the part which now finishes the work we find a fitting conclusion to what was so well commenced.

The third part continues the subject of the oxides, part of which appeared in the previous portion. After discussing a number of less important substances, but which, from their very number and the little that is known of them, must have cost no small labour to collect the information given, the subject of phosphoric acid and the phosphates is taken up. The discussion of the solubilities of these substances covers twenty-three double-column pages. Next follow the interesting groups of the Phosphates, Picramates and Picrates, the Resins and Resinates, and the Selenium compounds. Upon the Silicates the information is, as in other cases, fully brought up to the latest investigations, and is especially very full in the matter of the different varieties of the soluble silicates. The same may be said of the article on Sugar, with which much pains has been taken.

The capital group of this part, however, must of course be that of the Sulphates; accordingly, we find that the discussion of this portion of the subject covers nearly fifty pages, of which three belong to a single salt—the sulphate of baryta.

Other important sulphates, especially those of copper, iron, lead, magnesia, potash, and soda, are very fully treated, and the beautiful interpolation tables of Schiff and others are always given. The article on Sulphuric acid, which precedes the sulphates, is well written and full, and many valuable tables have been collected by the author. Next follow other interesting sulphur compounds, the Sulphides, Sulphites, Sulpho-carbonates, and the many other sulphacids and their compounds. The Tartrates, Tellurates, Titanates, Tungstates, and Zinc, bring up the conclusion of the book.

In those cases in which uncertainty exists, or conflicting statements have been made, Mr. Storer does not undertake rashly to reject either side, but gives us the statements as they stand, that we may form our own conclusions upon a basis as complete as the state of the subject permits. In some cases, a painstaking experimenter may find discordances in his own work which he cannot reconcile. In such cases, if he is satisfied that his own work has been well and carefully done, he does best simply to offer these results as he obtains them, and in such cases Mr. Storer has presented the subject in the same manner, as, for example, in the case of Bischoff's investigation on the solubility of the diphosphate of baryta in nitric acid.

It has been a matter of pleasure to us to see that Mr. Storer's book has elicited the warmest commendation as well from European chemists as from his own countrymen. It has already taken its place as a standard work. Chemical science has undergone so vast an expansion that the taking up of particular branches as specialties has become a necessity. In this way, and in this way only, can the work be done with thoroughness and completeness. We sincerely hope that Mr. Storer's labours will not terminate with what he has already accomplished, but that he will enrich chemical literature with other and equally valuable contributions.

M. C. L.

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ART. XVII.—*Clinical Memoirs on Diseases of Women.* By ALFRED H. M'CLINTOCK, M.D., F.R.C.S., etc. etc. With engravings. *Medicina tota est in observationibus.* Baglivi. 8vo. pp. 435. London: 1863.

THIS is an admirable series of essays, or "memoirs," as the author calls them, on many of the most important diseases of women, and by a writer whose ample experience and ability as a practitioner in this department of medicine have been long recognized in this country as well as in Great Britian. The work throughout is a strictly practical one, based entirely on clinical observations, and having for its single aim clinical instruction. It is so far original as it embodies the fruits of the author's eleven years' experience in the gynecological wards of the Dublin Lying-in Hospital, at the same time, however, the contributions from the leading authorities on female disease have not been neglected.

The memoirs embraced in the present volume are sixteen in number, each of them being devoted to a particular disease or subject, namely, puerperal pelvic cellulitis; pelvic inflammation and abscess in the non-puerperal state; procidentia uteri and the use of pessaries; inversion of the uterus; fibrous tumours of the uterus; polypus of the uterus, tumours of the vagina and of the vulva; pelvic, pudendal, and uterine hæmatocele; stone in the bladder; mammary inflammation and abscess; secondary hemorrhage after parturition; the semeiological value of the pulse in childbed; dropsy of the ovum, and cystic diseases of the ovum.

Each of these subjects is treated at some length, and with a degree of clearness well adapted to convey to the mind of the reader correct conceptions of the author's teachings. These teachings are always illustrated and enforced whenever they admit of it by well executed drawings, in addition to original clinical histories.

There is no one of the memoirs presented by Dr. M'Clintock that is not replete with valuable information; no one of which, had we the space at our command, a most interesting and instructive analysis could not be prepared. We must confine our notice, however, to the memoir which treats of "mammary inflammation and abscess." We have made choice of this, not so much from its greater worth, but from the extreme frequency, especially in the nursing female, of "gatherings" of the breast, and from the suffering and inconvenience to which these "gatherings" give rise, and the loss of the lacteal function, and the local deformity which so often result from them when neglected or improperly treated. It is these which invest everything in relation to the causation, pathology, and therapeutics of mammary abscess with such deep interest.

Dr. M'Clintock remarks that several instances of mammary abscess occurring during gestation, at the fourth month and upwards, have come under his notice. When it arises spontaneously its occurrence must be explained by the hyperæmic condition of the gland, which is its normal condition at the period referred to, having exceeded its physiological condition and passed into a state of actual phlogosis. He has been unable to detect any notable difference in the symptoms or course of such abscesses from those which take place *post-partum*, except that they are, perhaps, more frequently situated in the lobules, and are more tedious in their cure. When allowed to burst spontaneously, Dr. M'Clintock has generally observed that they did so by two or more separate openings. He has seen cases where there were four or five fistulous openings in the breasts when labour set in. When the abscess forms early in gestation it may completely heal before the setting in of labour, and with a little extra caution the woman will be able to suckle from that breast. Generally speaking, however, a breast that has been once the seat of inflammation and abscess is more liable to be again affected during lactation.

Dr. M'Clintock thinks he has found women to be more obnoxious to mammary inflammation and abscess in their first than in subsequent pregnancies. Of the abscesses of the breast, which he has seen during lactation, the great majority made their appearance within six weeks after delivery. A few occurred as late as ten or twelve months after delivery, and still fewer in the intervening period. He has preserved the notes of *eighty-two* cases of mammary abscess, observed by him in hospital and private practice. In eighteen of these cases both breasts were affected; in *twenty-nine* the right breast only, and in *thirty-five* the left. In only *thirty-four* instances was the number of the pregnancy noted. In these the abscess followed a first confinement on *twenty-three* occasions, over two-thirds of the entire number. Of the *eleven* multiparæ, three occurred in second pregnancies, no abscess having occurred in the first, as no attempt had been made at nursing.

The lateral and inferior lobes were the parts of the breast most frequently involved.

A very large proportion of the patients had sore nipples preceding the occurrence of mammary inflammation of the breast. Dr. M'Clintock, on a few occasions, has observed the inflammation of the breast to supervene immediately and directly upon ulceration or fissure of the nipple, as though it were an extension from it, whilst in other cases the gland became affected secondarily, in the same way as do the inguinal glands from irritation of the vulva or urethra.

"The great danger, in fact, to be apprehended from sore nipples," he remarks, "is mammary inflammation; and this may be considered imminent when the base of the nipple becomes hard and tender, and the act of nursing is productive of acute pain. Poulticing the nipple with bread and water, and giving it perfect rest, are the best means of checking this inflammation, and preventing its extension to the substance of the gland. The child should be applied to the breast only at long intervals, and for a short time, until the distension shall have diminished, and the flow of milk through the ducts become more free. By rest and a few hours' poulticing, the inflammation of the nipple may generally be removed, but the sore still remains, and this must engage close attention if the patient is to go on nursing. Under these circumstances I always tell the patient plainly that her continuing to nurse is attended with a certain amount of risk to herself. If, so far, there be no sign of inflammation in any part of the breast, we may safely promise that by *at once* giving up nursing the danger of abscess will be removed. If she persevere till some appearance of inflammation show itself, it is then too late—the mischief is done.

"Of sores of the nipple there are principally three varieties—the abrasion, the fissure, and the ulcer which is the worst of all. For superficial *abrasions*, astringent lotions, or a weak solution of nitrate of silver, often prove very beneficial. If the abrasion be inclined to scab, an unctuous application answers best, and should be applied immediately after nursing. A combination of basilicon ointment, Peruvian balsam, and honey melted together, I have found particularly serviceable. *Fissures* seated at the base of the nipple are a most painful and serious obstacle to nursing. Occasionally they are successfully treated by collodion, or a solution of gutta percha in collodion. This cements the edges of the crack together by forming an adventitious skin or covering that is not easily removed. It should be renewed each time the child is about to be put to the breast. Lightly touching the fissure with solid lunar caustic is also a very excellent application in some cases, and can be tried with cracks near the top of the nipple—a situation in which the former remedy could not be well used."

Ulcerated nipple is not often met with. It is usually the result of negligence and too frequent nursing. The best applications, according to Dr. M'Clintock, are solutions of nitrate of silver, diluted citrine ointment, and the ointment given above. The total relinquishment of nursing is generally required.

The following are stated to be occasionally useful in one or other form of sore nipple: lotions of an aqueous solution of pure tannin or of borax, chalk, spirits of wine, and rose water; equal parts of tincture of galls or of glycerine, and a compound tincture of benzoin, especially in cases of chaps or abrasions; a saturated solution of tannic acid in glycerine, oxide of zinc ointment, calamine ointment finely levigated, Goulard's cerate, resin ointment, white wax ointment, spermaceti ointment, and citrine ointment, singly or combined. It is to be borne in mind, however, that the most important step in the treatment of sore nipples is relinquishment of suckling.

Dr. McClintock remarks of the nipple shield that, whenever it can be used, and the child can be induced to suck through it, it is a very valuable means of protecting sore or tender nipples from the pressure and friction of the infant's gums and tongue. The simple Indian rubber shield he has found to be the most successful. A piece of soft chamois leather, one inch and a half square, with the two adjacent sides sewed together, makes, we are told, a shield which has succeeded when more elaborate instruments have failed.

Dr. M'Clintock has rarely known inflammation and abscess, after delivery, to result from distension of the breast alone, or where there was no irritation of the nipple, or previous abscess of the breast. Nor does he recollect a single instance of mammary abscess occurring in a woman who did not nurse, nor after the death of the infant, where no other cause of inflammation was present.

In fair, lymphatic women of scrofulous habits, an attack of acute mastitis sometimes occurs very unexpectedly without any apparent exciting cause, whether cold, injury, over-distension, or sore nipple.

Dr. M'Clintock does not consider the extract of belladonna, applied to the breast, to be superior to the common cerecloth. He has never been able to satisfy himself that, in cases of over-distended breast rapidly verging into inflam-

mation, any good results have followed the application of belladonna beyond the relief of pain.

It is very rare, Dr. M'Clintock remarks, that we can succeed in the reduction of mammary inflammation even when undertaken at the very onset of the attack. After free purging, the best internal treatment he believes to be the use of tartarized antimony in nauseating doses; as a local application, he prefers a cold lotion composed of muriate of ammonia dissolved in equal parts of vinegar, water, and spirits of wine. He thinks favourably, also, of the application of ice to the inflamed breast, with the same limitation under which the cold lotion is to be used, namely, not to employ it before the fifth or sixth day after delivery.

When the formation of an abscess seems inevitable, and the cold applications no longer assuage the pain, a flaxseed poultice may be applied and renewed every four or six hours. If the weight of the poultice be complained of, a double fold of lint moistened in the liniment composed of Goulard's water, olive oil, and laudanum, may be substituted. When, as is liable to be the case in patients of quick sensibility and sanguine temperament, the inflammation of the breast is attended with high fever and great pain, the above liniment, or equal parts of belladonna extract and cold cream will sometimes have a very soothing effect upon the breast, and greatly mitigate the patient's suffering. Over it may be applied spongio-piline wrung out of hot water.

Dr. M'Clintock is an advocate for late puncture in cases of mammary abscess. That is, deferring the puncture until the matter has approached so near the surface that fluctuation is quite distinct, and the intervening stratum of integument is very thin. The opening should always be as far as possible from the nipple, so as to lessen the danger of its retraction.

After the opening of the abscess, and the entire subsidence of surrounding inflammation, Dr. McClintock considers that strapping the breast is a most admirable means of checking the discharge and obliterating the sac of the abscess. In strapping the breast, he prefers to encircle the gland with strips of adhesive plaster, commencing at the base and extending up to the nipple, a small orifice being cut over the orifice of the abscess to allow the escape of the discharge. The strapping is to be renewed every day or two. When an abscess has been discharging for some time, and seems slow to heal, a lotion of equal parts of water and spirits of wine applied to the orifice has a good effect.

"When," remarks Dr. M'Clintock, "a patient is threatened with mammary abscess, she should cease to suckle the child from the affected breast. Unless it be a great object to her to continue nursing, or that she be a very robust woman and able to bear the double drain upon her, I advise the withdrawal of the child from *both* breasts. The sympathy between the two breasts is so great that the application of the child to the sound breast will continue to stimulate both. Besides this, the milk secreted under these circumstances cannot possess healthful or nutritious qualities." D. F. C.

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ART. XVIII.—*The Principles of Surgery: Clinical, Medical, and Operative. An Original Analysis of Pathology systematically conducted, and a Critical Exposition of its Guidance at the Bedside and in Operations, representing the Principles of the earliest and most exact Diagnosis, Etiology, Prognosis, and Therapeutics, Medical and Operative.* By FREDERICK JAMES GANT, F. R. C. S., Surgeon and Pathological Anatomist to the Royal Free Hospital; Assistant Curator of the Museum of Anatomy and Pathological Anatomy, University College, London, &c. London: John Churchill & Sons, 1864. 8vo. pp. 860.

PATHOLOGY being understood as signifying pathological anatomy, the subject and the object of the work before us may be learned from the title-page.

It is a treatise upon *applied pathological anatomy*, upon *anatomie patholo-*

*gique appliquée*, as Cruveilhier names this division of pathological anatomy, the one attached to clinical observation, and having for its object the study of the morbid species in their relations to diseases properly so called—that is to say, to their causes, their symptoms, their march, their terminations, and their treatment.[1] Mr. Gant says:—

"Every form of injury or disease presents certain pathological objects for investigation, by the knowledge of which its therapeutic treatment, medical and operative, *should* be conducted. I allude to the kind of disease or injury, with its situation and extent, as made known by *diagnosis;* its cause or causes, and the operation of the disease or injury itself, as an 'internal cause' of other morbid conditions—its relationship, in these respects, being indicated by *etiological* investigation; the foreknowledge of its probable course and tendency to this or that issue, by *prognosis;* and it would appear that, a large assortment of well-ascertained facts having accumulated, the period has now arrived when the attempt may be made to discover guiding principles[2] in each of these preparatory 'departments' of surgery, themselves suggestive of guiding principles of *therapeutic* treatment, and *together* forming rational principles of surgery, which might ever serve to direct the practitioner aright in any particular case, and regulate the course of further investigation."—p. 11.

The author claims that his work differs conspicuously from all others upon the "principles" or "principles and practice" of surgery. Its originality consists in this, that he has denominated a work upon "applied pathological anatomy" "The Principles of Surgery." Surgery means literally a work performed by the aid of the hand; the name being applied, however, to the study of diseases or injuries treated by manual operations, and the study of the operations demanded by these diseases. As a distinct branch of the medical profession, this is what is meant by surgery. The *Principles of Surgery* by James Syme is really and truly a treatise on surgical diseases, and the means employed to contend with them. The *Principles of Surgery* by Mr. Gant is, as we have just said, a treatise upon applied pathological anatomy.

In performing the most trifling operation, we must know exactly the seat of the lesion, its nature, and its limits; the changes in form, in the relation of parts, and in texture, caused by this lesion in neighbouring organs; its connection with various internal affections; and, in certain cases, its tendency to be reproduced again. In other words, the surgeon must know, in every case, the pathological anatomy, general, topographical, and applied; but he must know, besides, many other things. In reflecting upon what we have done ourselves, this very day, in practising surgery, we conclude that we were greatly served by a knowledge of anatomy—normal anatomy, we mean. In one case there was secondary hemorrhage on the nineteenth day after a ball had passed through the arm in such a direction that the brachial artery should be found at about the centre of the wound. A cut along the inner edge of the biceps muscle, and an incision through an aponeurosis, led to the median nerve; under and slightly inside of the nerve the artery was surely found, and a ligature placed above and below an orifice found to exist in it arrested the bleeding at once. In another case there was great secondary hemorrhage from a contused wound in the leg, and a ligature was readily applied to the anterior tibial artery, by which the bleeding was at once arrested, because we knew the vessel was to be found at the bottom of the first muscular interstice between the tibia and the fibula. In another case it was necessary to rid a patient of an injured leg, where it was just possible, as anatomy taught us, to amputate below the knee-joint. The section of the tibia was not made above the tuberosity, in order to leave the attachments of the ligaments of the patella, and not to open the synovial sac placed behind it, and even risk the articulation at the knee. The fibula was sawn off, and the head was left attached to the tibia, in order to avoid opening the articulation between the two bones, which in many cases communicates with that of the knee. It is evident that in these three cases the principles or fundamental truths by which we were

[1] See the General Considerations at the beginning of Cruveilhier's *Traité d'Anatomie Pathologique Générale.*

[2] "Principle—fundamental truth; first position, from which others are deduced; source."—*Johnson.*

guided in the practice of surgery were not derived from pathological, but from *normal* anatomy.

To show the views of Mr. Gant upon the subject, we shall make some extracts from his preface:—

"The operations of surgery were formerly regarded as *purely* anatomical performances. The *System of Operative Surgery, founded on the Basis of Anatomy*, by Sir Charles Bell, was a type of the period to which I refer. At length the influence of *diseased* and *living* conditions became apparent, and, like a dissolving view, the purely anatomical era passed away, and the pathological epoch began. Slowly, as out of a mist, the pathological man, clad in the tattered garb of disease, approached, and crept by stealth into the anatomical theatre. The teaching of the schools and their books on operative surgery thenceforth underwent some improvement, and advanced *somewhat* nearer to the requirements of the practical surgeon.

"Still, however, freighted with relics and mummeries of the dissecting-room, these works abounded with details of the purely anatomical method, and were garnished, not to say adorned, with pictures that bespoke their antiquated origin. The rude designs of the Gothic style were visible beneath the facings of the modern building; and in the construction of even the most recent manuals of practical surgery in this country, the basis is, I conceive, too purely anatomical."

We conceive that Mr. Gant has made one mistake in wishing to avoid another, and that his estimate of the value of pathological anatomy has led him to undervalue the claims of other branches of medical knowledge. Consequently the book which he has written, though an excellent one, considered as a work upon the applications of pathological anatomy to the study of the science and art of surgery, is by no means equally so upon the principles of surgery.

Should a new edition be called for, we venture to suggest not only that the title be changed, but also that it be very considerably curtailed. "The growth of knowledge," Mr. Gant himself argues (p. 84), "is unlike that of other things; for the more it increases, its bulk diminishes." It seems unkind to quote an author against himself, but we conceive it might be fairly done on the present occasion. The volume before us is the most bulky of any we know of, bearing a similar title. W. F. A.

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ART. XIX.—*Enuresis—Incontinence of Urine—in Children and Adults; its Causes, Nature, and Treatment: Comprising especially those Forms of the Disease which are associated with Surgical Affections of the Bladder and Adjacent Parts.* By WM. ABBOTTS SMITH, M. D., Member of the Royal College of Physicians, London, etc. etc. Second edition. 12mo. pp. 154. London: 1863.

THIS short essay furnishes a very useful and highly instructive manual of the pathology and treatment of an infirmity of very frequent occurrence, especially in early life, and which, when overlooked or improperly managed, is among the most annoying and troublesome of the diseases to which the young are subject. The essay contains, it is true, nothing particularly novel; its publication is, nevertheless, well timed, and cannot fail to do good. Owing to the misconceptions which are current concerning enuresis—especially the notion that it is entirely due to the faulty habits of the child, out of which he will very generally grow as he increases in years, a delay has often occurred in resorting to proper medical advice, in consequence of which, in cases where the incontinence was at first curable, it has been allowed to run into a chronic form, over which the physician has little or no control.

Enuresis is, in point of fact, a much more frequent disorder at all ages than, upon first consideration, it would appear to be; and the reticence of persons suffering from it, arising either out of a feeling of false modesty, or else from the importance of the affection being underrated, is often surprising.

As causes of incontinence of urine, Dr. S. enumerates; mechanical causes, or organic changes operating injuriously upon the bladder, and functional derangements of the viscus. The first set of causes comprises all those cases which

depend upon the irritating presence of calculi in the bladder or upon the detrimental effects of organic disease of the bladder, prostate gland or urethra, or of some part in their immediate vicinity.

If the cause cannot be traced to some derangement of the bladder or of the contiguous parts, it may, perhaps, result from a general atonic condition of the system, causing a relaxation of the muscular fibres surrounding the neck of the bladder, while the muscular coat of the organ continues to contract with its ordinary degree of force, or it may be caused by some morbid visceral agency, which, by exciting occasional reflex spasmodic action of the longitudinal fibres of the bladder, causes involuntary expulsion of the urine, notwithstanding the sphincter muscle possesses its normal amount of power.

In addition to these causes, Dr. S. enumerates, paralysis from exposure to cold, or from injury to the spinal cord; the presence of worms in the rectum, especially the acarus or oxyuris vermicularis, or the existence in the bladder and kidneys of the cystic entozoa; the presence of undigested food in the alimentary canal; habitual costiveness; the use of improper and over-stimulating food and drinks, and various derangements of the digestives apparatus. Enuresis is, likewise, frequently observed in persons suffering from different diseases of the skin, especially certain of the exanthemata and vesiculæ.

The predominance of the strumous, rheumatic, or gouty diathesis is frequently very conducive to the existence, or to the persistence of an attack of enuresis, especially the two latter in adults, and the former in children.

In the treatment of enuresis, there is scarcely a substance, whether included in the pharmacopœia or not, supposed to be possessed of tonic, alterative, astringent, or sedative properties, that has not been at some time or other vaunted to exert an almost specific action in controlling the disease. Belladonna, used internally and externally, catechu, kino, bistort, tormentil, gallic acid, cantharides, muriated tincture and other preparations of iron, nux vomica, strychnia, iodide and bromide of potassium, gum mastic, rhus radicans, copaiba, buchu, uva ursi, camphor, hyoscyamus, various preparations of opium, blisters to the sacrum, the application of galvanism, of cold, or of carbonic acid, etc. etc., have each, in turn, been praised as infallible or denounced as useless in this complaint.

This discrepancy may be accounted for, according to Dr. S., from the fact that practitioners, acting upon the strong recommendation of previous observers, have adopted a certain remedy or plan of treatment under wrong indications, or without first preparing the system for their favourable action.

It should not be overlooked, Dr. S. remarks, that the cure of enuresis will be greatly facilitated by certain moral and dietetic measures. Any bad habit, as that of not getting out of bed for the purpose of emptying the bladder at proper intervals, into which the patients, especially young children, may have fallen, either through indolence or fear, is to be counteracted, the quantity of fluid imbibed moderately restricted, particularly in the evening, and the usual diet selected from amongst articles of food which, while nutritious and easy of digestion, are unstimulating to the kidneys or to the bladder. Amongst the most objectionable articles may be enumerated hot liquids, especially tea, spices, pastry, salted and preserved meats, and most compound dishes.

The general remedial measures of sea-bathing, change of air, and exercise, will prove the most useful in atonic, strumous cases, but the patient, if old enough, should be debarred from horse exercise, which is apt to bring on the disorder in persons of a delicate organization, and when excessively indulged in, will frequently increase it and even render it intractable to medical treatment.

In respect to the various plans of local treatment which have been proposed, Dr. S. considers most of them to be unnecessary, and in many instances cruel. All mechanical restraints are particularly objectionable.

The best means of prevention is, perhaps, the establishment of a systematic plan of taking the child out of bed at regular intervals, so that the bladder may be kept from being overloaded by an accumulation of urine during the night.

Six cases are appended to the treatise of Dr. S. in illustration of the management of enuresis in the different circumstances under which it is liable to occur.

D. F. C.

ART. XX.—*Report of the Medical Missionary Society in China, for the year 1863.* 8vo. pp. 31. Hongkong, 1864.

SOME fifty years ago efforts were commenced by the several missionaries established in China by the Christians of the West, but chiefly, we believe, by the missionaries from the United States, to introduce into the then chief commercial city of the empire, for the advantage, more especially, of the poor and labouring classes, the plan of treatment for diseases and accidents pursued by the physicians and surgeons of Europe and America. It was a long time, however, before the prejudices, superstition, and exclusiveness of the governing and influential classes could be so far overcome as to allow of any systematic plan being carried out for shortening the duration, lessening the suffering, and diminishing the mortality among the sick of even the poorest classes in the community, by the enlightened skill of the physicians of foreign countries, or to secure, by the appliances of enlightened surgery, the lives, limbs, and usefulness of such as should have become injured in body or in limb.

Gradually, however, the advantages of Western skill in the saving of suffering and death in those submitted to its care became so very apparent that greater scope was allowed for its exercise; and even among the rich, the educated, and the distinguished classes of Chinese society the services of foreign and, in their eyes, barbarian medical and surgical practitioners were countenanced in the ailments and accidents of the labouring classes, and in occasional instances these services were had recourse to even for members of wealthy families.

About thirty years ago a hospital for the reception of patients was opened at Canton, which has been in regular operation, on a small scale, it is true, and with very imperfect accommodations, to the present day, except when interrupted by war. This hospital has done an immense amount of good to many thousands of the poor and toiling classes of the Chinese population, and has performed, also, no trifling part in the beneficent work of breaking down the wall of exclusion which for centuries has shut out from China all foreign intercourse.

Twenty-five years ago an organization was effected, under the name of the Medical Missionary Society of China, for the purpose of ministering more systematically and effectually to the wants and sufferings of the sick and disabled among the poor of Canton and such other parts of the country as they should be enabled to gain access to. At its annual meeting, in January of the present year, it took active measures for increasing the usefulness and efficiency of the hospital under its charge at Canton by enlarging and improving its accommodations.

Besides this hospital, the society have established a dispensary at Fuh-Shan, another at Shau-King; and another, at Shik-Lung, a large market town 40 miles east of Canton, on the East River, was opened in August, 1863. This last was established in connection with the Rhenish Missionary Society. The district of Tung-Kwang, of which Shik-Lung is the largest town, has been known as most hostile to foreigners, yet very little opposition was manifested, we are assured, to the opening of the dispensary. A comfortable house was obtained early in the summer, the rent of which is paid by the Rhenish Missionary Society.

From the report of the hospital at Canton, for 1863, we learn that the number of patients attended during the year was 14,628 at Canton, 5,445 at Fuh-Shan, and 1,730 at Shik-Lung. The number of children vaccinated was 1,494. The number of in-patients received was 452, and about 600 surgical operations were performed. Pecuniary assistance to the amount of $75.55 was given to some of the most destitute in-patients and to some of those out of doors. The amount disbursed on account of hospital and dispensaries was $1,376.34; from this, however, must be deducted a balance from last year of $129.62, and the sum of $87.34 received for medicines and trusses sold, leaving the sum of $1,159.38, expended for rent, hire of assistants, medicines, aid to poor patients, etc.

The whole number of patients attended to at all the places was 21,803. The diseases with which the greater number of the patients were affected were those of the eye and skin, ulcerations, rheumatism, scrofula, syphilis, bronchitis, dropsy,

dyspepsia, intermittent fever, etc. In addition to these, instances occurred of almost every other disease capable of assuming a chronic form.

Cholera, we are informed, prevailed more or less in Canton during six or seven months of 1863, and in various other parts of the province. The epidemic was a somewhat mild one; notwithstanding, the deaths were numerous, and many cases terminated fatally in a few hours. In a city like Canton, where in many parts cleanliness is not considered necessary either for health or comfort, it is a matter of surprise that an epidemic like cholera does not sweep off the inhabitants by thousands, and yet it is a fact that the close, narrow, and filthy streets suffered no more than such as are wide and clean. No part of the city is properly drained, and all the inhabitants are exposed alike to whatever poisonous emanations may be caused by the accumulation, in confined situations, of vegetable and animal substances in process of decomposition. There is certainly a great difference in the condition of the inhabitants as to ventilation and food, but it does not appear that the poor, in their crowded hovels, were more liable to the disease than the rich, whose houses were large and open, and whose diet was good and sufficient. Epidemic cholera in China, as in all other countries, has heretofore set at defiance all the rules of hygiene which seem to be so well established by reason and experience; pursuing its course and selecting its victims in a manner altogether inexplicable by those laws by which other epidemic diseases are governed.

The number of surgical operations performed at the hospital and dispensaries under the care of the Medical Missionary Society of China, during the year 1863, was much larger than in former years. Six hundred operations, including the minor ones performed on outdoor patients, are reported. The following are some of the most important: Lithotomy, 12; lithotrity, 1; cataract, 23; removal of dead bone, 16; extraction of bullets, 9; tumour of breast, 4. Only one fatal case occurred as the result of an operation. It was in an old man operated on for stone in the bladder.

*Urinary Calculi.*—Thirteen cases, as stated, were operated on during the year 1863; in all but one the lateral operation was performed. The excepted case was relieved by lithotrity. Eleven of the cases resulted in complete recovery. In the report a table is presented showing the principal facts of each case, including also four remaining from 1862. The table is a continuation of one published two years ago. Of the twenty-seven cases included in the former table, all were successful but two. Lithotrity was performed in two cases, and the lateral operation in the remainder. In four of the twenty-seven cases the patients were over fifty years of age, and six were under twenty years. Of the remaining seventeen cases, four of the patients were fifty years of age and over, one was forty-nine, and five were under twenty years, including two of thirteen.

A curious case of deformity of both hands and both feet is given. It occurred in a man thirty-one years of age, admitted into the hospital for incurable disease of the eyes, attended with nearly entire loss of sight. All the fingers except the thumb and little finger of both hands were wanting, with a similar deficiency of the toes between the great and little toe, in both feet. The metacarpal bones of the missing fingers were also wanting, with a similar deficiency in the metatarsal bones of the feet, except that the little toe of the right foot had two metatarsal bones. The wrist and ankle joints were perfect. Neither the parents nor three living sisters of this man were deformed.

A curious case is related of *hydatids of the kidneys*, in a man twenty-seven years of age, who sought relief from a urinary affection of which he had been the subject for about five years. His urine was as *white as milk*, and containing substances which resembled thick mucus, but, on examination, were found to be hydatids. They varied in number and size; sometimes but one or two, at others twenty, thirty, or forty would be discharged at once. They were generally so small as to be easily voided, but occasionally one would be so large as to obstruct the passage, and require straining for several hours before relief was obtained. Sometimes the urine continued for a few days or a month of its natural color and appearance, the hydatids being absent. Debility, loss of flesh, anxiety of countenance, etc., indicated a serious derangement of the general health of the patient. D. F. C.

ART. XXI.—*On Poisoning by Diseased Pork. Being an Essay on Trichinosis, or Flesh-worm Disease: its prevention and cure.* By JULIUS ALTHAUS, M.D., M.R.C.P. Lond., Physician to the Royal Infirmary for Diseases of the Chest. London: John Churchill & Sons. 1864. 8vo. pp. 34.

THE reader will find in this Essay an excellent description of the trichina, illustrated by figures of the parasite in its different stages of development, with a history of the symptoms to which it gives rise when introduced into the human system, and the best modes of treating the morbid phenomena which it occasions, and, what is more important, the measures which should be adopted in order to protect from the trichinous infection.

We have so recently (see No. for April) given in our pages a full account of this parasite and of all the known epidemics of Trichinosis that we need not now recur to the subject, but we can recommend Dr. Althaus' Essay as furnishing an excellent exposition of the subject.

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ART. XXII.—*A Manual of the Practice of Medicine.* By THOMAS HAWKES TANNER, M. D., F. L. S., etc. etc. From the last London edition, enlarged and improved. 12mo. pp. 699. Philadelphia: Lindsay & Blakiston. 1864.

MANUALS of either of the branches of medicine or its collateral sciences, accurately and skilfully prepared, may, perhaps, under certain circumstances, be useful to the student and young practitioner as remembrances of former studies. When, however, manuals and compends are relied upon as adequate exponents of the particular subject, the outlines of which they respectively present, they become, without doubt, impediments rather than helps to the acquisition of any useful or reliable kind or amount of knowledge. Now as this latter is unfortunately the use to which they are too commonly applied, we strongly incline to the opinion that it would be better to stamp with the seal of disapprobation all compends and manuals than to attempt the almost impracticable task of confining them to their very restricted sphere of usefulness.

As a mere manual we have no special fault to find with the volume before us. Dr. Turner has, with considerable ability, filled up and perfected the meagre and incomplete outline furnished in his first edition, so that, as far as the account now given by him of the "practice of medicine" extends, it presents a very concise outline of the present condition of our pathological and therapeutical knowledge, and delineates the leading features of diseases—with their causes, history, and treatment—by no means unskilfully, but only, as it were, in meagre outline.

D. F. C.

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ART. XXIII.—*A Treatise on Gonorrhœa and Syphilis.* By SILAS DURKEE, M. D., Consulting Surgeon to the Boston City Hospital; Fellow of the Massachusetts Medical Society, &c. &c. Second edition, revised and enlarged. With eight colored illustrations. Philadelphia: Lindsay & Blakiston, 1864. 8vo. pp. 456.

THE first edition of this work was reviewed in the number of this journal for October, 1859. The changes in the present edition consist of some few and unimportant additions, of which the chapter on "Infantile Syphilis" has received the most. These additions do not alter the character of the work, nor justify our changing the opinion expressed in regard to it in our former notice.

W. F. A.

# QUARTERLY SUMMARY

OF THE

# IMPROVEMENTS AND DISCOVERIES

IN THE

# MEDICAL SCIENCES.

## ANATOMY AND PHYSIOLOGY.

1. *Introduction of Air into the Veins.*—M. Oré has recently experimented on this subject (*Gaz. Hebd.*, 1863, p. 33). He found, that, though an animal is inevitably killed by the introduction of a given quantity of atmospheric air, an equal and even greater amount of nitrogen, of hydrogen, or of carbonic acid, may be injected with impunity into another animal of the same weight and race. Oxygen may be introduced in almost any amount. An animal which would have been unable to bear 80 cubic centimetres of air scarcely suffered from the introduction of 300 cubic centimetres of oxygen. Death may be prevented by the use of electrical currents in such a way as to provoke energetic respiratory movements, even when a quantity of air is injected otherwise sufficient to at once destroy the animal. The author attributes death partly to distension of the right side of the heart, partly to paralysis of the muscular tissue of that organ, caused, as he supposes, by a sedative action of the air; he employs electrical irritation of the pneumogastrics, with the view of preventing the latter effect, imagining that dilatation of the chest would to some extent remove the air from the heart. A. Mercier (*ib.*, p. 321) does not admit this explanation; the *vis a tergo* necessary to drive in the air with sufficient force to cause mechanical distension of the heart does not exist; and as to the idea of a paralysis caused by the air, it is well known that the heart of an animal will beat for a considerable period after its removal from the chest. Mercier published in 1837 and 1838 (*Gaz. Méd.*), and has since repeated, an explanation which appears to agree better with the facts. Death from the injection of air or any other gas occurs with rapidity, because the pulmonary circulation is interrupted, because the brain is not supplied with blood; indeed, the condition is just such as would be induced by a prolonged syncope. This interruption occurs, not because the heart is distended or unable to contract, but because the frothy mixture on which it acts does not obey its efforts, but passes with great difficulty, or not at all, through the capillaries of the pulmonary artery. Such a difficulty, indeed, results, first, because the gaseous molecules have little affinity for the walls of the capillaries. It is a fact perfectly established in physical science that the passage of a liquid through very delicate tubes is rendered more difficult by its mixture with a gas. Secondly, because the impulse caused by the contraction of the heart is only very partially transmitted to the more remote ramifications of the pulmonary artery, owing to the compressibility and elasticity of the gas. Thirdly, because at the moment of a contraction, the valves are not so exactly closed by a gas as by an incompressible liquid; and for that very reason a reflux takes place with greater ease from the ventricle into the auricle, and from the latter into the veins. The author has found in the inferior vena cava air which had entered spontaneously by the superior. It is also possible that the viscous con-

dition of the blood is increased or diminished by particular gases. In accordance with his theory, he considers that if death takes place, as in a prolonged syncope, because the brain is too long without the necessary amount of blood, it would, perhaps, be possible to delay this termination till the heart could liberate itself, provided the whole of what little blood passes through the left side of the heart, notwithstanding the obstruction, could be carried to the brain. For this purpose he recommends: 1. To keep the head low: the experiments related in Bouillaud's report prove, indeed, that animals die with greater rapidity when the head is elevated. 2. To compress the axillary arteries and the abdominal aorta, or in case of need, the femorals. A dog, into whose heart he had passed a considerable quantity of air, passed four times from death to life, and from life to death, according as he pressed or not on the aorta (one axillary artery had been ligatured); it ultimately recovered (*Gaz. Méd.*, 1838). He considers that electricity facilitates the circulation in the lungs, and should therefore be used when at hand.—*The New Sydenham Society's Year-Book*, for 1863.

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2. *Physiological and Therapeutical Action of Oxygen on Animals.*—DEMARQUAY and LACONTE have made a series of observations on the physiological action of oxygen on dogs. They found that these animals were capable of respiring oxygen for a long period of time without other apparent effect than increased liveliness and augmented appetite. They then made extensive wounds in the axillæ of the animals, and observed: 1. That the wound became considerably congested; 2. That a flow of transparent serosity took place from the injured surface; 3. That, after long exposure to the gas, numerous petechiæ or small ecchymoses made their appearance; and 4. Closely similar effects were observed when oxygen was directly injected into the blood. The injection of the gas into the veins requires to be undertaken with care; but it was found that nearly two quarts could be injected without killing the animal, if it were introduced through the vena porta or through the vena cava below the liver; the venous blood in these instances did not appear altered in colour, the spleen alone, as though it were a blood-gland (an organ of hæmatosis), acquired a scarlet tint. All the abdominal veins became turgid, the increase in the quantity of the blood in these parts, obviously resulting from the experiment. In other experiments made on rabbits, it was found: 1. That these animals could live from fourteen to seventeen hours in pure oxygen; 2. That when death occurred, the muscular system was universally engorged with blood, and had assumed a peculiar rosy tint; 3. That the ordinary difference in colour between arterial and venous blood, contrary to the opinion of Broughton, was perfectly well marked; and 4. That in opposition to the statements of Beddoes, no organ was found inflamed or gangrenous.

On applying oxygen gas to wounds in the human subject, no acute pain was perceived, but pricking and heat were complained of. When the gas was injected into the mucous or serous cavities the same sensations were produced. In one instance it effected the radical cure of hydrocele. When placed in contact with healthy wounds, the suppurative process becomes modified, the purulent discharge in a few hours becoming less abundant and thinner, the granulations smaller and grayer in tint; but on the removal of the oxygen they assume a bright colour, and if it be applied several hours in the same day it may induce acute inflammation. It rapidly modifies and removes the inflammatory circle of redness which surrounds ulcers, eczema, &c. Oxygen, when respired by man to the extent of twenty-nine or thirty quarts, produces little effect. Various sick persons in these experiments derived benefit from such a dose daily repeated; they perceived sometimes a little heat in the pharynx, and a little confusion in the head, or headache; the pulse usually rose a little in frequency and force, but sometimes fell; the appetite improved, and there was a general sense of comfort and of increased energy. It does not appear to suit those greatly exhausted by suppurating wounds, or those in the later stages of phthisis.—*Brit. and For. Med.-Chir. Rev.*, from *Comptes Rendus*, vol. i. 1864.

## MATERIA MEDICA AND PHARMACY.

3. *Abstract of the Report of the Committee on Chloroform, made to the Royal Medical and Chirurgical Society, July* 4, 1864.—In laying their report before the Council of the Medical and Chirurgical Society, the Committee on Chloroform desire to state that they have made comparatively little reference to the medical portion of the subject. This is not due to their thinking the medical uses of chloroform of little importance, but to the fact that but few replies to their inquiries upon this point have been received.

In view of the great extent of the subject submitted to their consideration, the committee directed their attention to such points as appeared to them of chief practical importance. Thus their observations respecting the action of chloroform on the nervous system, and their remarks on some other points, are less full than would have been desirable had the committee regarded such details as of equal importance with those specially elected for investigation—such as its influence on the action of the heart and on respiration.

The committee have chiefly confined their physiological report to observations which they have themselves made. Without overlooking or neglecting the labours of former investigators, they have endeavoured rather to furnish an accurate account of experiments which they have observed carefully and together, and to compare the results thus obtained and agreed upon with the phenomena of cases in which death or peril of life has arisen from the inhalation of chloroform in the human subject.

*Physiological Conclusions.*—The sequence of the phenomena produced by chloroform inhalation in animals is similar to that observed in man, and if the same percentage of the agent be administered, the results produced are nearly uniform. The first effect of chloroform vapour is to increase the force of the heart's action; but this effect is slight and transient, for when complete anæsthesia is produced, the heart in all cases acts with less than its natural force. The strongest doses of chloroform vapour, when admitted freely into the lungs, destroy animal life by arresting the action of the heart; whilst by moderate doses the heart's action is much weakened for some time before death ensues, respiration generally, but not invariably, ceasing before the action of the heart, death being due both to the failure of the heart's action and to that of the respiratory function. The danger attending the use of chloroform increases with the degree of stupor it induces; the apparent irregularities in the action of the anæsthetic mainly depending on the varying strength of the vapour employed, on the quality of the chloroform, and on the constitution of the patient. In order that it may be administered with comparative safety, it is necessary that the proportion of vapour should not exceed 3¼ per cent.; that its effects should be carefully watched, and the inhalation suspended when the required anæsthesia is induced.

In many respects the action of ether is similar to that of dilute chloroform. At first its vapour increases the force of the heart's action—an effect which is both greater and of longer duration than that observed with chloroform. The stimulation is followed by a depression of the force of the heart's action, but at the same degree of insensibility ether does not depress the action of the heart to the same extent as chloroform. Eventually ether kills partly by enfeebling the action of the heart, but chiefly by arresting the movements of respiration. Thus the energy with which chloroform acts, and the extent to which it depresses the force of the heart's action, render it necessary to exercise great caution in its administration, and suggest the expediency of searching for other less objectionable anæsthetics. Ether is slow and uncertain in its action, though it is capable of producing the requisite insensibility, and is less dangerous in its operation than chloroform. On the whole, however, the committee concur in the general opinion which in this country has led to the disuse of ether as an inconvenient anæsthetic.

A mixture of ether and chloroform is as effective as pure chloroform, and a safer agent when deep and prolonged anæsthesia is to be induced; though slow

in its action, it is sufficiently rapid in its operation to be convenient for general use. A mixture composed of three parts of ether, two parts of chloroform, and one part of alcohol (by measure), is to be preferred on account of the uniform blending of the ether and chloroform when combined with alcohol, and the equable escape of the constituents in vapour; and the committee suggest that it should be more extensively tried than it has hitherto been in this country.

*Effects of Chloroform on the Fauces.*—The sudden administration by the mouth of concentrated chloroform vapour induces a spasm of the fauces, which lasts for some seconds; afterwards, when the animal has inspired, the phenomena of asphyxia are for a time associated with those of chloroform poisoning, and death is finally induced as by dilute chloroform. If, however, partial insensibility is first induced by weaker chloroform, no spasm of the fauces ensues upon the sudden administration of the concentrated form of the agent.

*Post-mortem Appearances.*—Judging from the observations on animals—the appearances in the human subject having been noticed in but few cases, and being insufficient for yielding satisfactory conclusions—it appears that though there may in certain cases be an impediment to the free circulation of the blood through the lungs, yet the appearances are very different after death has been caused by chloroform from those observed when life has been destroyed by asphyxia. In death from chloroform, all the cavities of the heart are distended, and the cases are only exceptional in which the left side is empty. The rule, however, is alike in both—that the cavities of the right side contain more blood than those of the left.

*Resuscitation.*—The most certain means of restoring life after poisoning with anæsthetics is by artificial respiration. By this means resuscitation may generally be accomplished after natural respiration has ceased, provided the heart continues to act, and it may *sometimes* be effected even after the cessation of the heart's action; but this result is exceptional. Galvanism resuscitates within the same limits as artificial respiration; it is, however, far less to be relied on than artificial respiration in equal cases. With either remedy it is found that animals quickly rendered insensible by a strong dose are more easily recovered than those which have been gradually narcotized even by a small percentage of the anæsthetic.

*Rules relating to the Administration of Chloroform.*—The anæsthetic should on no account be given carelessly, or by the inexperienced; and when complete insensibility is desired, the attention of its administrator should be exclusively confined to the duty he has undertaken.

Under no circumstances is it desirable for a person to give chloroform to himself.

It is not advisable to give an anæsthetic after a long fast, or soon after a meal; the best time for its administration being three or four hours after food has been taken.

If the patient is much depressed, there is no objection to his taking a small quantity of brandy, wine, or ammonia, before commencing the inhalation.

Provision for the free admission of air during the patient's narcotism is absolutely necessary.

The recumbent position of the patient is preferable; the prone position is inconvenient to the administrator, but entails no extra danger. In the erect or sitting posture there is danger from syncope. Sudden elevation or turning of the body should be avoided.

An apparatus is not essential to safety if due care be taken in giving the chloroform. Free admixture of air with the anæsthetic is of the first importance, and, guaranteeing this, any apparatus may be employed. If lint, or a handkerchief, or a napkin is used, it should be folded as an open cone, or held an inch or an inch and a half from the face.

The anæsthetic should invariably be given slowly. Sudden increase of the strength of the anæsthetic is most dangerous. Three and a half per cent. is the average amount, and four and a half per cent with ninety-five and a half of atmospheric air is the maximum of the anæsthetic which can be required. Given cautiously at first, the quantity, within this limit, should be slowly increased

according to the necessities of the case, the administrator being guided more by its effect on the patient than by the amount exhibited.

The administrator should watch the respiration of his patient, and should keep one hand free for careful observation of the pulse.

The patient who appears likely to vomit whilst beginning to inhale the anæsthetic should be at once brought fully under its influence, and the tendency to sickness will then cease.

The occurrence during the administration of an anæsthetic of sudden pallor or of sudden lividity of the patient's countenance, or sudden failure or flickering of the pulse, or feeble or shallow respirations, indicates danger, and necessitates immediate withdrawal of the anæsthetic until such symptoms have disappeared. On the occurrence of these symptoms, and especially if they should become so urgent as to threaten death from failure of respiration, of heart-action, or of both together, the following rules of treatment are to be observed: Allow free access of fresh air; pull forward the tongue, and clear the mouth and fauces; keep or place the patient recumbent; dash cold water on the face and chest, and aid the respiratory movements by rhythmical compression of the thorax. In the more threatening cases artificial respiration must be commenced instantly; and this rule applies equally in all cases, whether the respiration has failed alone, or the pulse and respiration together. Galvanism may be used in addition to artificial respiration, but the artificial respiration is on no account to be delayed or suspended in order that galvanism may be tried.

Few if any persons are unsusceptible of the influence of chloroform, from two to ten minutes being required to induce anæsthesia. The time, however, varies with age, temperament, and habits.

The mixture of chloroform, ether, and alcohol should be given in the same way as chloroform alone; care being taken, when lint or a handkerchief is used, to prevent the too free escape of the vapour.

*Use of Chloroform in Surgical Operations.*—With heart-disease the anæsthetic may be given in any case which requires an operation, although when there is evidence of a fatty, weak, or dilated heart, great caution is demanded. Valvular disease is of less importance.

In phthisis, when an operation is unavoidable, the anæsthetic may be given with impunity.

For all operations upon the jaws and teeth, the lips, cheeks, and tongue, the anæsthetic may be inhaled with ordinary safety. By care and good management the patient may be kept under its influence to the completion of the operation. In these cases, blood, as it escapes, if not voided by the mouth, passes into the pharynx. If any small quantity finds its way through the larynx, it is readily expelled by coughing. In operations upon the soft palate, fauces, pharynx, and posterior nares, if sudden or severe hemorrhage is likely to occur, it is not advisable to induce deep insensibility.

In cases requiring laryngotomy and tracheotomy the anæsthetic may be employed with safety and advantage.

For operations upon the eye, involving the contents of the globe, the use of anæsthetics is open to objection on account of the damage which the eye may sustain from muscular straining or vomiting. If employed, profound insensibility should be induced.

In operations for hernia, and in the application of the taxis, the anæsthetic acts most beneficially. For most operations about the anus profound anæsthesia is positively demanded.

In the condition of shock, or of great depression, as after hemorrhage, careful administration of the anæsthetic diminishes the risk of an operation.

In all cases, other than those specially referred to, it is sufficient to state, so far as a mere surgical operation is concerned, that an anæsthetic may invariably be administered.

The continuous vomiting occasionally induced by and following upon the inhalation of anæsthetics, may be injurious by consequent exhaustion, as well as by mechanically disturbing the repair of a wound. With this reservation they do not appear to interfere with the recovery of patients from surgical operations.

*Statistics.*—The results of 2586 capital operations performed before, and of

1860 performed since, the introduction of anæsthetics, collected from all authentic available sources,[1] prove that anæsthetics have in no degree increased the rate of mortality.

*Use of Chloroform in Obstetric Practice.* (*a*) *In natural labour.*—The careful administration of chloroform during labour is not attended with special danger, there being, either in this country or abroad, so far as is known to this committee, no well-authenticated instance of sudden death where it has been given by a medical practitioner; but the occasional occurrence of unfavourable symptoms demands the exercise of caution during its employment. Administered in a moderate degree, it does not, as a rule, weaken the expulsive powers, and is decidedly beneficial in promoting dilatation of the maternal passages. It does not predispose to puerperal convulsions or other like complications. The balance of opinion is nearly equal as to whether it predisposes to imperfect contraction of the uterus after delivery. As a rule, it in no way retards the convalescence of the mother; nor has it any tendency to interfere injuriously with the function of lactation; nor has it any injurious influence on the child.

(*b*) *In abnormal labour.*—The anæsthetic may be employed with advantage in various obstetrical operations—as forceps, turning, craniotomy, and extraction of retained placenta—unless the patient is much enfeebled by hemorrhage; when, if given, it ought to be accompanied by the use of stimulants. It may also be employed advantageously to check the paroxysms in puerperal convulsions.

(*c*) *As to the preference of ether. Rules relating to the administration of chloroform.*—There are no reasons for giving preference to ether over chloroform, the latter being much more desirable in obstetrical practice generally, the only exceptions being those in which chloroform notably disagrees.

In addition to those given for administration in ordinary cases, it is generally desirable to observe the following rules during its administration in labour, subject to modifications at the discretion of the practitioner: In natural labour, begin to give it generally at or after the termination of the first stage; but it may be given earlier if the first stage is unduly painful, or if the os uteri resists dilatation. Give it only during the pains, and withdraw it in the intervals. When the fœtal head bears on the perineum, give it more freely to promote relaxation and relieve the increased pain. Withdraw the chloroform immediately after the child is expelled. If the patient is depressed or the pains are sluggish during its administration, an occasional stimulant may be administered. In cases where it seems to interfere with the progress of labour it may be necessary to suspend its use for a time, and reapply it after an interval, or even to withdraw it altogether. In turning and instrumental deliveries deep anæsthesia must be induced, as in surgical operations, and the administration should then be intrusted to a competent person, whose sole duty should be to attend to it. In midwifery a special inhaler for its administration is not generally necessary or desirable, a handkerchief or towel, so folded as to prevent blistering of the face and to allow free admixture of atmospheric air, being sufficient for the purpose.

(*d*) *Use of chloroform in diseases of women and children.*—In the treatment of diseases of women, chloroform may be employed to facilitate and lessen the pain of certain examinations. In cases of spurious pregnancy and phantom tumours, by relaxing the abdominal parietes, it may assist in demonstrating their true characters; and, acting in the same way, it may help the practitioner to define more accurately the character and relations of other abdominal and pelvic tumours, or to detect feigned disease.

As a therapeutic agent, its inhalation, and external application in the form of a liniment, may be usefully employed to allay pain in some cases of severe dysmenorrhœa, neuralgia, and the like.

There is accumulated testimony in favour of chloroform inhalation proving serviceable in various spasmodic diseases of women and children: as hooping-cough complicated with convulsions, spasmodic croup, epileptic seizures and

[1] Appendix D to the Report.

some other forms of convulsions in children; hysterical convulsions, epilepsy, and various muscular contractions in women.—*Med. Times and Gaz.*, July 16, 1864.

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4. *Action of Bromide of Potassium.*—In our last number (p. 219), we noticed the statement of Dr. H. Behrend as to the effect of this salt in insomnia and restlessness, dependent upon nervous irritability; and this statement is confirmed by Dr. S. W. D. Williams, House-Surgeon to the General Lunatic Asylum, Northampton, who says that he has tried the medicine during the first five months of this year, in 37 epileptic cases, all of which were also more or less insane. All the patients but 11 were more or less benefited, but none were entirely cured.

Dr. Williams has not the same confidence in recommending, as Dr. B. does, the unfettered use of half-drachm doses; for, he says, in several of the cases "it was found necessary to reduce even the average—ten grains twice daily; and in the majority the first use of the drug was accompanied by sickness and lassitude.

"Those patients on whom the drug seemed to take the most effect in this way were seven in number; after using it for a few days the action of their hearts became slow and fluttering, the eye lost its lustre, the skin was cold and clammy; they had a wearied, anxious look, and complained of headache, and sickness, and shivering, and of unusual weakness at the knees, and invariably sat crouched up by the fireside all day, evidently devoid of all energy and resolution. Curiously enough, in all the cases thus powerfully affected the fits were increased instead of diminished.

"The drug excited hypercatharsis in two patients, which was repeated again and again each time it was renewed; the fits in both these cases were diminished; in the case of the female, from 41 to 22.

"One patient, S. A., was apparently, five months ago, one of the most healthy persons in the home—fat, strong, and rosy; but soon after taking the bromide, the peculiar symptoms described above developed themselves, and the medicine was immediately omitted; but, although she rallied a little, her system never thoroughly recovered itself: tubercles became developed in the lungs, and she died towards the end of April. Truth compels me to confess that I have my doubts whether the bromide of potassium had not something to do with this poor girl's death—at all events, this occurrence has made me very watchful when using it.

"On the other hand, considerable benefit has arisen from its use in some cases; it undoubtedly exercises a most powerful influence on the nervous system, and often soothes the irritability of epilepsy, even if it does not diminish the frequency of the fits, when no other medicine will take any effect, and in this way will be found a most valuable adjunct to the repertory of an asylum Dispensary. I cannot think that it has much effect, however, on the sexual system; for in some cases where it was used more especially with that view, there was no apparent result, but of its powers in inducing sleep in cases dependent on nervous irritability there can be no doubt, and often from ten to twenty grains twice daily will suffice to effect this."—*Med. Times and Gaz.*, July 23, 1864.

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5. *Diuretic Properties of the Clematis.*—We have largely employed during several years past the seeds of the wild clematis (*Clematis vitalba*, a plant which is indigenous to England, known by the common name of "Traveller's Joy,") as a diuretic, and in a great proportion of cases we have obtained very satisfactory results. These seeds, which are scarcely used in Belgium, are well known and much appreciated in Holland, where many practitioners prescribe it in the treatment of dropsy, and speak highly of its value. Our first trial of this remedy was in 1858, in the following case of anasarca consequent upon Bright's disease of the kidneys:—

P——, 38 years of age, a carriage-builder's workman, was admitted into the Bavière Hospital, under M. Sauveur, having every symptom of chronic albuminuria—viz., a large quantity of albumen in the urine, general anasarca, dimness

of vision, and incipient hypertrophy of the left ventricle, without valvular lesion' which condition, as has been shown by M. Traube, is always a result of morbid alterations of the kidneys. Digitalis was first administered, and afterwards purgatives, which diminished the effusion to a slight extent, but they produced an attack of diarrhœa which weakened the patient so much that it was requisite to discontinue them. At this stage Professor Sauveur ordered the infusion of clematis seeds to be taken. The effects of this remedy were very remarkable; copious diuresis was established, the quantity of albumen became less every day, and the dropsy was soon entirely removed.

We had recourse to the same treatment shortly after this, with equal success, in a case of albuminuria occurring in a man who was also the subject of inveterate syphilis, and in whom Bright's disease of the kidneys, apparently following upon amyloid degeneration of those organs, had reached its last stage; the effusion was very considerable, and all treatment which had been adopted had proved unavailing. The infusion of clematis seeds, which was given by itself, removed the anasarca after a few days' time. In the case of this man, the medicine increased the quantity of urine to a singular extent; but was reduced to its normal quantity within one day after the patient had discontinued taking it. When he left the hospital, the albumen, which had been very excessive for some time, was greatly diminished in amount. It is unnecessary to multiply examples, and we shall therefore only add, that since we had under treatment these two cases which have been detailed, we have prescribed this remedy in all forms of dropsy, whether dependent upon renal disorder or affections of the abdominal viscera, and that we have almost always found it to be successful.—*Medical Mirror*, from *Ann. de la Soc. Méd.-Chir. de Liege.*

6. *Effects of the Excessive Use of Sugar on the System.*—Dr. CHAMPOUILLON communicated the result of his observations on the effects of the excessive use of sugar on the system. So far back as the year 1846. the author undertook a series of experiments on himself, in order to supply the Minister of War with information as to the possibility of replacing salt by sugar in the preparation of the preserved meat destined for the use of the army during a campaign. In accordance with his instructions, M. Champouillon strictly confined himself to the diet which may be accidentally enforced on the garrison of a besieged city by the hardships of war, and for several days in succession lived on the following rations: sixteen ounces of beef preserved in sugar, and four ounces of biscuit; water was his only beverage. Various phenomena supervened in the following order: thirst, sinking at the stomach, distaste for food, nausea, acid regurgitation, epigastric pain, diarrhœa, prostration, and syncope.

"I carefully watched these symptoms," says M. Champouillon, "and the loss of appetite and nausea indubitably proceeded from the absence of variety in my diet; whereas the thirst, heartburn, epigastric pain and diarrhœa were as clearly referable to the difficulty of digesting cane sugar. In proportion to the impression produced by this substance on the organs of taste, it clogs the palate and destroys natural appetite. This excessive indulgence in syrups, sweet-meats, pastes, and highly-sweetened diet-drinks, brings on distaste for food, and annihilates the digestive powers, especially in cases of pulmonary consumption. After expatiating on the transformation of cane-sugar into glucose, in consequence of its contact with the acids contained in the gastric juice, and on the injury caused by the increased activity imparted to the functions of the stomach by frequent repetition of the process, M. Champouillon showed that in addition to the inflammatory congestion thus occasioned glucose powerfully contributes to the establishment of a plethoric condition of the system, and that the prevalent opinion that the excessive use of sugar tends to cause pulmonary irritation and a disposition to atrophy, is but too well justified by facts. In support of this view, the author adduced two interesting cases, one of apoplexy, the other of hæmoptysis, in which the agency of this cause was distinctly evident.

"I have often remarked," said he, "in thirty-three years' experience of tubercular disease, that the cough, hectic fever, and night-sweats are increased by the fondness of the patients for sweet substances. I conceive this to be the natural consequence of the combustion of the glucose in the system, a phenomenon which

necessarily implies the production of water, carbonic acid, and heat. It is a well-known fact that three and a half ounces of sugar consumed in the human body evolve an amount of heat equivalent to what might be produced by the combustion of thirty-two grains of charcoal. MM. Favrot and Silberman have shown that fifteen grains of charcoal are sufficient to impart one degree (cent.) of heat, eight kilogrammes, or sixteen pounds of water. If the capacity of the human body for caloric is the same as that of water, three ounces and a half of sugar will, in a subject weighing seventy-five kilogrammes (12½ st.), raise during their combustion the temperature of the body four degrees and a half (centigr.)

The practical conclusion of this paper is that it is desirable to reduce within as narrow limits as possible the consumption of sugar, especially in cases of tuberculosis, and to replace that substance by honey, or a decoction of liquorice.—*Dublin Med. Press*, Feb. 24, 1864, from *Journ. de Méd. et Chirurg.*

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## MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

7. *Heat Apoplexy.*—Dr. J. Bonnyman, Assistant Surgeon 89th Regiment, makes (*Edinburgh Med. Journ.*, May, 1864) some interesting remarks on this little understood affection.

"Heat apoplexy," says Dr. B., "or, as it is frequently denominated, *sunstroke*, is essentially a disorder of warm climates. It is common to both the white and the coloured races of mankind; but, as will be seen hereafter, the former are more prone to its attack than the latter, and though the male sex is more obnoxious to it than the female, yet the latter not unfrequently fall victims to it. Age does not appear to exert much influence in its causation, for it is met with at ages varying from five to fifty years; nor does it attack the weakly and spare in preference to the strong and robust, both being equally liable to its invasion. The only condition that is invariably present during its prevalence is a high atmospheric temperature. Moisture and dryness appear to be little concerned in its production, for, in most parts of India, during May and the first half of June, the atmosphere is hot and dry, and then heat apoplexy is more rife than at any other season. On the occurrence of the rains towards the end of June, and during July and August, when the temperature falls, it becomes rare, again appearing, but for the most part to a less extent, during the months of September and October, when the air has again become hot, but now loaded with moisture. During the summer of 1860, in consequence of the lateness of the coming on of the rains, the hot season was of longer duration and more severe than usual, and, accordingly, in very hot stations, like that of Jhansie, heat apoplexy was of very frequent occurrence up to the end of July. * * *

"Though direct exposure to a burning sun may undoubtedly occasion an attack, yet this is by no means an essential condition. By far the greater number of cases that yearly occur in India are those of men who have not been so exposed. It is not unusual for men who go to bed in apparent health to be seized during the night, and patients in hospital, who have been confined to bed for days previously, are frequently the subjects of attack. Great atmospheric heat, then, appears to be the condition chiefly concerned in the production of the malady, and whatever assists in rendering heat oppressive, as stillness and closeness of the air, overcrowding and deficient ventilation, assists also in disposing to a seizure.

"The predisposing causes are not very evident; the principal may be said to be those of a debilitating nature, as, mental depression, anxiety, great bodily exertion, fatigue, intemperance suppressed perspiration, and existing disease, particularly in any of the depurating organs. Those who have a constitutional tendency to cerebral disorder, or to derangement or irregular circulation of the blood within the head, are also probably more liable to be effected.

"The disease is sometimes preceded for a few hours, or even days, by a feeling

of general uneasiness, or by symptoms referable to the head; but it often comes on suddenly without any warning, the patient being seized with loss of consciousness, sensation, and voluntary motion, breathing stertorously, and expiring in ten or fifteen minutes."

"Relapses," according to Dr. B., are frequent. "Those who recover from the more dangerous symptoms require for some time afterwards to be frequently seen and carefully watched, as sleep may come on, and the symptoms recurring, the disease may have advanced too far before attention is directed to the patient's state.

"The appearances after death," says Dr. B., "observed in those who have died of heat apoplexy, without any complication or co-existent disease, are pretty constant and unvarying. Irregular patches, of a livid red colour, are seen scattered over the whole external surface of the body; those over the neck and dependent parts being large, while those on the anterior surface are smaller and more numerous. These blotches not unfrequently begin to form before life is extinct. Rigidity of the muscles is slight or absent, but this is probably due to *rigor mortis* being incomplete at the time of examination, in consequence of the short time that in hot countries is allowed to elapse between the occurrence of death and the period of sepulture. The features are generally natural, face pale, eyes bright, pupils dilated. Froth, occasionally mixed with blood, is seen about the mouth and nostrils. The abdomen sometimes becomes much inflated soon after death, and the whole body retains the animal heat for a long time. On opening the head, the encephalon and its membranes are found congested, and the veins and sinuses full of dark blood. A quantity of clear serum is generally discovered at the base of the brain. The cerebrum and cerebellum, on being cut into, exhibit many vascular points, but in other respects they are, for the most part, firm and healthy. The lateral ventricles are found full of a clear serum, and the choroid plexuses are generally pale and shrivelled. The lungs are gorged with dark blood, and the bronchi filled with frothy mucus. The right side of the heart generally contains fluid or semifluid blood, and the left side is empty. The liver, spleen, and kidneys partake of the general congestion. The blood throughout the body is of a dark colour and fluid, a great quantity of it draining from the head during the examination of the brain."

The disease occurring only when a high temperature prevails for a prolonged and continuous period, we are naturally led, says Dr. B., "in attempting to ascertain its origin and nature, to inquire in what manner animal life is affected by great heat; what organs are thereby influenced; what functions undergo increase, and what decay. The usual effects of increased atmospheric heat are, augmented cutaneous transpiration, diminished excretion of urine, thirst, languor, depression, and accelerated circulation. Besides these effects, however, Crawford, Prout, Copland, and other observers have found, that, during elevated temperatures, the blood, in the process of respiration, does not undergo the usual changes.

"It has been shown that, when high ranges of temperature prevail, the blood undergoes imperfect purification in the lungs; and in enumerating the symptoms of heat apoplexy, the skin was described as hot and dry—hotter and drier than in perhaps any other known affection—the urine as nearly suppressed, and the bowels as constipated. From this it is manifest, that in this disease not only do the other emunctories not make up by an increase in their functions for the deficient respiratory changes, but that they themselves also cease, in a great measure, to perform their depuratory office. And when it is borne in mind how absolutely necessary, for the welfare of the body, and even for the existence of life, the proper performance of the functions are, it cannot be matter of surprise that, on the interruption of functions of so many important organs, as the lungs, kidneys, skin, and intestines, disease of a grave character should result. That the retention in the system of matters that ought to be eliminated is intimately concerned in the production of the disease, is further demonstrated by the large quantities of black morbid matters that continue, for some time afterwards, to be evacuated from the bowels of those who recover from the malady. * * *

"In the advanced stage of heat apoplexy, it has been shown that all the depurating organs cease to act; but the order of cessation in the different functions

has not been observed. As, however, the experiments of Dr. E. Smith prove that the higher the temperature of the atmosphere rises, the less becomes the amount of carbonic acid exhaled by the lungs, it is probable that the blood first undergoes alteration, and that almost simultaneously with the blood, the organic nervous system becomes affected. Thus the blood is changed, and the functions of organic life are impaired from the outset of the disorder."

In the treatment of heat apoplexy, Dr. B. thinks that the "principal object to be kept in view is the re-establishment of the excreting functions. If the case be not very urgent, that is, if the patient be sensible and coma be not threatening, stimulants, as ammonia or brandy, in small quantities, may be administered. The affusion of cold water to the head and chest ought to be assiduously employed till the preternatural heat of the surface of the body has disappeared. Purgative enemata ought to be used, and free action of the bowels obtained as soon as possible. Diuretics and diaphoretics ought also to be prescribed. Chlorate of potash in water, or oxygenated water, may be employed as an ordinary drink, and the patient ought to be placed in a large room well supplied with pure and cool air. If the case be more advanced, and danger imminent, then not a minute is to be lost. The patient is to be at once removed into a large room, or, if the case occur at night, into the open air, where he ought to be stripped naked, and placed on his back on a cot, with his head slightly elevated. Cold water in a full stream is then to be poured from a height of about two feet on the head and chest. The extremities are at the same time to be well rubbed, and the arms may be alternately raised and depressed, as in the employment of artificial respiration. Enemata of cold water, or of salt and water, may be thrown up, and sinapisms applied over the epigastrium and abdomen. Small quantities of brandy are, from time to time, to be given, care being taken not to choke the patient, deglutition being slow and difficult. In the employment of the cold affusion, the following practice may be followed: Let the stream of water fall for about half a minute on the head and chest, and then be interrupted for a few seconds, when it is to be again allowed to fall on the head and chest for an equal length of time as before, followed by a similar interval of cessation, and so on, till the surface of the body is reduced to the natural temperature. Care must be taken not to employ the cold affusion too long or too uninterruptedly, otherwise great depression will be produced by the cold, and recovery prevented. The patient is now to be well dried, put to bed, and lightly covered with bedclothes, the head being kept somewhat elevated. The effects of stimulants are to be watched, and they are to be continued, if necessary. If the heat of skin return, or if the head become hot, the cold affusion must at once be had recourse to. These measures ought to be persevered in for a long time, for apparently hopeless cases sometimes recover. Amelioration is shown by the disappearance of stertor, and by deeper and more regular respiration. The immediately dangerous symptoms being got rid of, if the hair of the head has not been already removed, it ought now to be cut short, and a blister applied to the nape of the neck; action of the bowels ought to be solicited, and free perspiration encouraged. Venesection ought never to be practised. If reaction set in rather strongly, and headache be much complained of, a few leeches may be applied to the temples, or what is preferable, blisters may be applied to the back of the neck or to the sides of the head. Patients who recover require careful watching and attendance till all the functions of the different organs have been completely restored.

"During convalescence the attention must be directed to the regulation of the secretions and excretions. For this purpose tonics and aperients will chiefly be required. The skin must be kept clean and warm, and bathing in tepid or cold water daily practised. The diet ought to be moderate in quantity, and consist of nourishing, non-heating, and easily digestible food. Every means to impart tone and vigour to the body should be employed."

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8. *Chemosis of the Conjunctiva as a Symptom of Suppurating Meningitis.* —Dr. Leyden wishes to draw the attention of the profession to this circumstance, as within a short time he has met with three cases in which chemo-

sis of the conjunctiva constituted a very distinct phenomenon, all the other structures of the eye retaining their complete integrity.—*Med. Times and Gaz.*, Aug. 13, 1864, from *Virchow's Archiv.*, Vol. 29, No. 1.

9. *Pain in the Knee-Joint as a Symptom of Meningitis.*—Dr. LUND called the attention of the members of the Norwegian Medical Society, at a meeting held 25th November, 1863, to a phenomenon which he has sometimes observed in children suffering from meningitis, and which he regards as having a bearing on the diagnosis of this disease. "The first time," he says, "my attention was drawn to this symptom was sixteen or seventeen years ago, when a girl, aged about nine years, who, after supposed exposure to cold, was attacked with violent pain in the right knee-joint, on examination of which nothing could be discovered, came under my care. The pain was increased on any attempt to move the joint; there was no pain in the hip-joint or in any other part of the extremity, but there was some fever and general disturbance. A brother of the patient had some time previously died of inflammation of the brain. As I have no notes of this first case, in which I observed pain in the knee as a symptom of meningitis, I can state only that signs of cerebritis, which soon ended fatally, set in first several days after the occurrence of the pain."

Three other cases, in which Dr. Lund observed this symptom, are recorded.

"Were I," observes Dr. Lund, "from the few observations I have made to draw any conclusions as to the symptom in question, they would be the following:—

"Pain in the knee occurs not very unfrequently as a symptom in meningitis in children. It is met with in about ten per cent. of such cases.

"This pain in the knee is persistent, is sometimes very violent, increases on every movement of the joint, and is not relieved by local means. It is connected neither with swelling nor with any other change in the form or appearance of the joint.

"It may attack one or both knees.

"It may occur some time before the distinct development of the other symptoms of cerebral inflammation, and may then either (as in the fourth case) cease before the appearance of the latter, or it may continue (as in the third case) until the disturbance of intelligence makes it uncertain whether it any longer exists; or it may (as in the second case) manifest itself after the cerebral symptoms have already been developed.

"It may present itself both in acute and in chronic cases. It seems to be most violent in the more acute cases, and in those combined with severe spasms (as in the second case).

"In the cases observed by me it occurred between the sixth and fourteenth year, and in both sexes.

"I am not aware that I have observed a pain in the knee in children presenting the characters I have described, except in connection with meningitis. Therefore, I assume that when it occurs, it must be regarded as a not unimportant diagnostic sign. Either it will, by its appearance before the development of the cerebral symptoms, give a hint that meningitis is to be expected, or by manifesting itself in the course of that disease, it may afford a distinctive mark, facilitating the diagnosis between meningitis and other affections liable to be confounded with it, as, for example, typhus.

"I will not attempt any further explanation of the occurrence of this symptom, especially as I have had the opportunity of examining *post-mortem* only one of the four cases which were under my care, and in that one I had permission only to open the head. That all four patients laboured under cerebritis, must be looked upon as certain. But whether the pain in the knee in these cases was connected with and was caused by the changes existing in the brain, or whether it should be ascribed to a coexistent inflammation in the spinal marrow or its membranes, is perhaps more difficult to decide. But in favour of the first view I may remark, that the pains in the lower extremities which accompany inflammation of the spinal cord, usually have a greater extent, and are not confined to particular joints, are most frequently combined with spasmodic

twitchings in the extremities, and soon pass into paraplegia, not to mention that the dorsal pain in this affection is generally tolerably well marked."—*Dublin Med. Press*, June 29, 1864.

10. *On Subclavian Murmur.*—The evidence furnished in a paper by Dr. Thos. Palmer (*Lancet*, April 2, 1864) goes to show very conclusively that subclavian murmur is quite consistent with a perfectly healthy condition of the artery or lung.

"It happens," Dr. P. says, "that I am medical officer to certain benefit societies, composed exclusively of working men. In examining those presenting themselves for admission, I have for years been struck by the large number of them, seemingly in rude health, who were subjects of subclavian murmur. I was at first uneasy lest this should betoken latent mischief, but soon found that my cases of phthisis, heart and lung disease, were not in excessive proportion. This year I have kept an exact account of the number examined, the age and trade of each, with the proportion of them who were subjects of this sound. These I have put into the form of a table as below. No one was less than seventeen or more than forty-four years of age.

| Trade. | No. | Right. | Left. | Both. |
|---|---|---|---|---|
| Porters | 4 | 1 | .. | 1 |
| Painters | 19 | 1 | 1 | 2 |
| Photographer | 1 | .. | .. | .. |
| Clerks | 5 | .. | .. | .. |
| Domestic servants | 2 | .. | .. | 1 |
| Farriers | 4 | .. | .. | 2 |
| Coach, cab, and carmen | 16 | 2 | 3 | 2 |
| Carpenters | 9 | 1 | 1 | 1 |
| Gravedigger | 1 | .. | 1 | .. |
| Toll collector | 1 | .. | 1 | .. |
| Butchers | 3 | .. | 1 | .. |
| Masons, bricklayers, and plasterers | 10 | .. | 1 | 1 |
| Gold refiner | 1 | .. | .. | .. |
| Shopmen | 6 | .. | .. | .. |
| Shoemakers | 5 | .. | .. | 1 |
| Smiths | 7 | .. | 3 | .. |
| Labourers | 10 | 1 | .. | .. |
| Tailors | 3 | .. | 1 | .. |
| Horsekeepers | 4 | 1 | .. | .. |
| Gardener | 1 | .. | .. | .. |
| Sawyers | 2 | .. | .. | .. |
| Police | 2 | .. | .. | .. |
| Plumbers, &c. | 6 | .. | 3 | 1 |
| French polishers | 2 | .. | .. | 1 |
| Hydraulic engine man | 1 | .. | .. | .. |
| Unknown | 4 | .. | 1 | .. |
| Total | 129 | 7 | 17 | 13 |

"From this table it will be seen that of 129 men of the callings specified, 37, or more than one-fourth, were subjects of this murmur; nevertheless they were all in the enjoyment of perfect health, except for a hernia or some deformity of the extremities, perhaps. I shall make no attempt here to speculate as to the effect of different callings in causing subclavian murmur, interesting as the question is, being fully aware that a vastly larger number of cases must be accumulated before such an attempt can be safely made.

"The entire value, in a practical point of view, of subclavian murmur as an index of disease, depends upon its causation. If, then, I can show that it may arise from natural causes, and is compatible with the enjoyment of perfect health in a large number of persons, I shall have contributed towards a just estimate of its value as a sign of disease.

"That the murmur is of arterial origin no one will doubt who has read Dr.

B. W. Richardson's admirable essay on it in his *Asclepiad*. I shall therefore take this as proved. The causes of the sound in health I believe to be several; of two at least I have no doubt—viz., 1st, pressure exerted on the artery by a subclavian muscle enlarged by any cause; and, 2d, by diminution of its calibre from below by elevation of the first rib. The former of these causes is espoused by Dr. Richardson in his essay, where, if I understand him aright, he mentions no other origin for the murmur in health; the second is here advocated, as far as I know, for the first time. While admitting freely my belief that many instances of the sound have their origin in pressure by the subclavian muscle, I am of opinion that another series of them is caused by elevation of the first rib; and this view is supported by the following considerations: 1. That in many cases the murmur is heard only during inspiration and holding of full breath, and that in others it is greatly increased at those times, though continually present in a less degree. 2. That this vessel rests on the surface of the first rib, which is usually grooved for it, indicating very close proximity; an elevation of this bone, then, by the scalenus anticus or otherwise (as by holding out the arm), will trench upon the calibre of the artery, and give rise to the murmur in conformity with the well-known law; when the rib falls again, the sound falls with it. The minute and constantly occurring irregularities in the distribution of arteries and other parts will naturally and easily account for the occurrence of the murmur in some individuals only. 3. That the murmur is much more frequently found on the left side than on the right, as all observers unite in saying. This circumstance appears to me to be owing to the different courses which the two arteries pursue with reference to the first rib; the left, arising deep in the thorax, passes up behind and hooks over the corresponding rib, and is thus much more likely to feel the effect on its calibre of an upward movement of that bone than the right subclavian, which follows a nearly horizontal course from the innominata.

"That some other cause besides increased volume of the subclavian muscle operates in producing the murmur is evident from the fact of its more frequent occurrence in the *left* artery, whereas the *right* muscle is the strongest worker. Thus, in the above list, the three smiths presenting the sound all have it on the left side; the two sawyers examined had it not at all, yet this very trade—that of sawing—is specified by the advocates of the subclavian muscle as predisposing; and of nine carpenters, only three presented it. Again, there is no doubt that, in most cases, the action of raising the arm to a right angle with the trunk markedly increases the sound, and this is claimed by the advocates of the muscles as establishing their view; but I submit that it is equally calculated to prove that the elevation of the first rib is the cause, for the clavicle and it are so firmly united by the costo-clavicular and coraco-clavicular ligaments that the former cannot be raised without the latter partaking in the upward movement. The subclavian muscle itself also contributes to move the rib upwards; for, in the case contemplated, it takes action from the more fixed point (the clavicle) to the less fixed one (the rib).

"In those cases where the murmur is heard to be increased during inspiration, or is only then present, a little caution is required in order to discriminate duly between the augmented murmur and the mixture of the natural vesicular with the arterial sound. The risk, too, of recording as subclavian murmur sounds produced by one's own stethoscope must be remembered, but can easily be avoided by searching for the murmur chiefly beneath the centre of the clavicle; it is only in the outer part of its course, where the artery emerges from beneath the bone, that I have been able to produce the sound at will. Were any confirmation wanted of the fact that the murmur is arterial, it would be found in the circumstance that it may often be heard rapidly increasing in intensity while nervousness under a somewhat protracted examination makes the heart beat fast and strongly.

"I cannot but think that a careful consideration of the figures and facts given above will satisfy most that in a working man free from discoverable disorder this murmur is wholly untrustworthy as an evidence of disease. I studiously confine my assertion to the case of working men, because among them my observations have been made. As to the richer classes the medical officers of

life insurance companies could make highly interesting observations. Of the value of subclavian murmur as a diagnostic help, when associated with other evidences of disease, no one is more conscious than I am; but this forms no part of the object I have proposed to myself in this paper."

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11. *Tracheal Dysphagia.*—Dr. Hyde Salter relates (*Lancet*, July 2 and 23, 1864) five cases of tracheal dysphagia, and sums up his conclusions respecting it in the following propositions:—

"That dysphagia is a symptom of catarrh.

"That the circumstances attending this form of dysphagia show that it depends on an inflamed and (at any rate sometimes) ulcerated state of the windpipe.

"That dysphagia, therefore, does not necessarily imply an implication of the organs primarily concerned in swallowing; that, in fact, it may be an affection of the organs of respiration, and not of deglutition.

"That this form of dysphagia is a transient affection, and terminates favourably.

"That its diagnostic signs are remarkably clear and precise.

"That the recognition of this cause of dysphagia must greatly modify the grave and unfavourable prognosis that the symptoms would otherwise suggest."

Dr. Salter states that his treatment of this affection is respiratory treatment. "In managing these cases," he says, "I thought nothing of the dysphagia; I thought of the tracheitis, and treated them as uncomplicated cases of respiratory disease, and in each case I was rewarded by complete and rapid success. My principal treatment was sedative and counter-irritant, with functional rest, external warmth, and such a suspension of sources of irritation as is implied in breathing a warm air, keeping the mouth shut, &c."

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12. *The Condition of the Stomach and Intestines in Scarlatina.*—Dr. Samuel Fenwick read before the Royal Medical and Chirurgical Society (June 28, 1864) a paper, the object of which was to prove the following propositions: 1st. That the mucous membrane of the œsophagus, stomach, and intestines is inflamed in scarlatina. 2d. That desquamation of the epithelium of these parts takes place. 3d. That, notwithstanding the anatomical changes in the mucous membrane of the stomach, the formation of pepsine is not prevented. 4th. That the condition of the skin is similar to the condition of the mucous membrane in scarlatina. In support of the first proposition, the microscopic examinations of the mucous membranes of the œsophagus, stomach, and intestines were detailed in ten cases of death from scarlatina during the first week of illness, and in six cases who died in the second and third week of the fever. The first effects of the scarlatina poison upon the mucous membrane of the stomach were shown to be the congestion of the bloodvessels and the stripping the epithelium from the tubes and the surface of the organ, and also the softening of the tissues. The tubes are greatly distended by granular and fatty matters, or by small cells intermixed with granules, and in some cases they are lined by a newly-formed membrane. Sometimes no normal cells can be distinguished; in other cases they are present, but are scattered irregularly. After the second or third week the tubes are found less distended than at an earlier period, and whilst their closed ends are still loaded with granular matters, which greatly obscure the gastric cells. These become more evident towards the surface of the mucous membrane. The cells at this period are sometimes very large, sometimes loaded with fat or coated with granules, and seem to have but little adhesion to their basement membrane, as they readily separate from the tubes, but adhere closely to each other. The effects of the inflammation upon the intestines seem, in slighter cases, to consist in the effusion of granular and fatty matters into the mucous membrane; but in more severe cases the tubes of Lieberkühn are obstructed by epithelial cells, whilst extravasations of blood take place in the villi, and these, with the rest of the mucous membrane, are loaded with small cells and granules. In one case the mucous membrane was entirely stripped of villi, excepting a few fragments which still remained, and the enlarged and prominent openings of the follicles of Lieberkühn gave its surface the appear-

ance of a sieve. In some instances in which the pancreas has been examined, evidences of disease presented themselves. The second proposition was stated to be more difficult of proof, inasmuch as vomiting usually occurs only in the first stage, and the author had no opportunity of examining the vomited matters at this period of the disease. In one case, in which vomiting took place in the third week, fibrinous casts of the stomach tubes were discovered, and inflammation of the mucous membrane was proved to have existed by post-mortem examination. The chief reason upon which the opinion that desquamation of the epithelium occurs was founded, was from the microscopic examination of the contents of the stomachs of those who had died of this disease. The contents in recent cases consisted of pieces of fine membrane, of cells, and of granules and shreds of membrane. The membranes were of the shape and size of the tubes of the stomach, and were covered with granules and fat. The cells varied from 1-1200th to 1-2200th of an inch, and were usually fringed with fine pieces of membrane. In cases of longer duration the membranes were covered with cells, and were also of the size and shape of the stomach tubes. In order to ascertain if these appearances were trustworthy as evidences of inflammation, the contents of the stomachs of forty-five subjects were examined at the Middlesex Hospital, the condition of the mucous membrane being at the same time noted. In only one were there any fibrinous casts, and it was in a case of acute gastritis. In eighteen there were only separate cells, chiefly of the columnar form, and in none of these was there any inflammatory action. In eight cases casts of the upper parts of the tubes were plentiful, composed only of healthy conical cells, and in all the mucous membrane was in a natural condition. In eighteen there were either plugs formed of cells and granules from the secreting parts of the tubes, or the casts of conical cells were overlaid with granular matters, and in all of these the stomach was more or less inflamed. Two cases of gastritis, unconnected with scarlatina, were also quoted as examples of the forms in which casts of the stomach tubes appeared in vomited matters during life, and the author stated he had detected casts of the stomach tubes in matters vomited by persons affected with gastritis connected with diseased kidneys, with inflammatory dyspepsia, and other forms of inflammation of the gastric mucous membrane. It was urged that if casts of the gastric tubes can be discovered during life in cases of gastritis, and if in scarlatina this condition exists, and casts have been found in the stomach after death, there is every probability that desquamation of the epithelium takes place in this organ as it does in the skin and the kidneys. In support of the third proposition, the results of the following experiments were given in three cases of scarlatina: Ten grains of hard boiled white of egg were digested at a temperature of 90° for twelve hours in an infusion of the mucous membrane, to which 3 per cent. of hydrochloric acid had been previously added. The average loss of albumen was three grains and two-thirds. Similar experiments performed with the stomachs of eleven males, who died of various diseases at the same hospital, gave an average loss of four grains; so that there had been scarcely any diminution of pepsine produced by the fever. As a contrast to this were the results of similar experiments upon four cases who died of typhus fever. In two of these the albumen had gained three grains of weight by imbibition, and was not at all softened; whilst in the other two it was softened, and one had lost only half a grain, the other one grain and a half in weight. But as the activity of the digestion must depend not only upon the relative amount of pepsine, but also upon the bulk of the mucous membrane, this was also attempted to be estimated. The average weight of the mucous membrane of the stomachs of ten males dying of various diseases at the Middlesex Hospital was eighteen drachms, the weight of two recent cases of scarlatina was eighteen and sixteen drachms (the latter being in a boy), whilst it only amounted to fifteen drachms in one who died in the third week of illness. In four cases of typhoid fever the average weight of the mucous membrane only reached eleven drachms. Under the fourth proposition it was stated that the skin had only been examined microscopically in three cases. In the first, in which the patient died after a few days' illness, the only morbid appearance in the cutis was an occasional minute extravasation of blood in the neighbourhood of the sudoriferous ducts. The rete mucosum was greatly thickened, and nume-

rous round cells with large nuclei were everywhere visible, intermixed with the natural cells. The basement membranes of the sweat-glands were thickened, and the epithelium lining them was so much increased that in most cases it obstructed their channels. In some of the sweat-glands the coils of which they were composed were loaded with coagulated blood, and were greatly and irregularly distended. In the other recent case the appearances were similar, excepting that the external layers of the cuticle were stained with blood in minute patches, and the sweat-ducts were also reddened; but there were no extravasations of blood either in the glands or cutis. In some of the ducts the epithelium was detached from the basement membranes. In the case of a man who died during the third week the sudoriferous tubes were still choked up, but in the glands the epithelium seemed in many places to be torn away, leaving the basement membranes bare, or only covered by ragged particles. The cutis was in a natural condition. The author stated that although he had, in accordance with the usual custom, described the appearances of the skin and mucous membranes as the results of inflammation, yet that certain considerations suggested the idea that the term when so used was perhaps misapplied. In scarlatina, we find that in each part the morbid condition is mostly confined, in the first instance, to the basement membranes, and consists in the formation of layers of new cells, which, in the skin, are transformed into cuticle of natural appearance, and in the stomach contain pepsine. If future researches should prove that a similar condition occurs in the kidneys and other parts, it will be necessary to look upon the structural changes produced as resulting from increased physiological, rather than from pathological action; and that the primary effect of the scarlatina poison is suddenly and violently to stimulate the natural cell-growth of the various secreting organs.

Dr. Wilson Fox said that he had listened with much pleasure to Dr. Fenwick's very able paper. It had possessed an especial interest for him, inasmuch as Dr. Fenwick's observations on scarlatina confirmed those which he had himself communicated to the Society in 1858, on the condition of the stomach in a variety of acute diseases, including variola, typhoid and puerperal fevers, pneumonia, peri and endocarditis, cholera, and many others, in which he had found the stomach in a condition very closely resembling that described by Dr. Fenwick, and which, after Professor Virchow, he had designated as one of acute catarrh, the mucous membrane being hyperæmic, swollen, and cloudy-looking, and covered with very tenacious mucus. This condition Dr. Fox had always found associated with a granular condition of the epithelial cells, which were shed with great facility both from the surface of the membrane and from the interior of the tubes, and were found in great numbers, and often enlarged and presenting multiple nuclei in the tough mucus covering the surface. Dr. Fox said that since he had made these observations he had been in the habit of regarding the furred condition of the tongue in acute diseases as an index of the same irritative production of epithelium through the gastric intestinal tract. He had also at the same time been able to point out, on anatomical grounds, that chronic affections of the stomach were frequently associated with chronic affections of other organs. On some points of detail Dr. Fox said that his observations differed from those of Dr. Fenwick. He had not examined with the microscope stomachs of patients dying from scarlatina, but the appearances which these presented to the naked eye corresponded so closely with those to which he had alluded, that he spoke on them with more confidence than he should otherwise feel inclined to do. He still thought, as he had pointed out in his original paper, that the granular matter which Dr. Fenwick described as occurring free in the tubes was really contained in the interior of epithelial cells, and that it was only in the severest cases of acute gastritis, in which the cells became at once broken down, that the granular matter was found free. With regard to the casts of tubes described by Dr. Fenwick, Mr. Fox, not having examined the stomachs of scarlatina patients, could not make any positive observations, but he had never found any in the cases of other diseases which he had mentioned. He had, however, often observed appearances in the mucus having a most deceptive resemblance to casts, from the manner in which the epithelial cells were agglutinated by the tough mucus. He did not think that

these casts, if they did occur in the stomach, could be of a fibrinous nature any more than the first epithelial desquamations from the kidney in the early stages of Bright's disease possessed that character; nor was he of opinion that the membrana limitans of the gland separated with the epithelium. He believed that when the membrana limitans (when it existed) was destroyed or injured, the power of reproducing epithelium was impaired or lost. Epithelium often separated in continuous masses from mucus surfaces and from the interior of glands.[1] Such desquamation was not only exceedingly common under conditions of irritation, but was also under some circumstances a physiological act. It had been noted long ago by Mr. Goodsir during digestion, and many recent observations on this subject were contained in Virchow's Archiv. Dr. Fox was of opinion that Dr. Fenwick's observation, though very valuable as evidencing the participation of the stomach and intestines in the consequences of the scarlatina poison, did not show anything specific in that organ or peculiar to the disease in question.—*Med. Times and Gaz.*, July 23, 1864.

13. *Indigestion in Early Phthisis.*—Dr. E. SYMES THOMPSON, in an interesting paper, read before the Medical Society of London (March 28, 1864), observed that indigestion in phthisis was regarded by some as a part of the malady dependent on impure blood; by others, as but a casual complication, tending, by its depressing influence, to the production of tubercle. In fifty cases of undoubted consumption, tabulated with a view to this inquiry, dyspeptic symptoms were found to exist at the commencement in about one-half. In one-fourth the disease seemed to follow inflammation of the lungs or of the pleura. Cough was the first symptom noticed in one-fourth; and shortness of breath in about one-eighth of the cases. Hæmoptysis, though frequently an early symptom, was rarely the first.

Without referring to the later derangements of the later stages of phthisis, except to state that those who early suffer most from dyspepsia are subsequently prone to diarrhœa, the author passed to the consideration of the first variety of indigestion—especially common in hereditary cases—in which the general feebleness of the digestive functions is traceable to a want of constitutional vigour. The food is slowly digested, produces a sense of fulness and pain in the epigastrium, and between the shoulder-blades. The gastric juice may be copious; but it is too weak to perform its function; hence arise waterbrash and sour eructations, or the secretion is diminished; the mucous coat becomes dry and abraded; and the red glazy tongue, flushed face, and epigastric oppression, afford evidence of the diseased condition. In these cases the feeble organ must not be overcharged; by diluting the food we may hasten its passage through the pylorus. Milk is the simplest diet; and, when mixed with lime-water, passes uncoagulated through the stomach. But when the digestive power of the small intestine is deficient, animal food, which is the longer retained and more completely digested in the stomach, should be preferred to vegetables, and fat must be interdicted. Where solid food can be borne, a little nicely cooked meat, with aërated bread toasted, may be taken in the morning, when the stomach is most vigorous. Stimulants should only be given when they help digestion. Nauseating physic, violent exercise, cold, and anxiety must be avoided; but gentle out-door exercise, cold or tepid sponging, with friction of the skin, encouraged. The good effect of active occupation of the mind and body, though acknowledged in ordinary dyspepsia, is often disregarded in consumption. Food is best taken in small quantities at frequent intervals: for it has been shown by Dr. Edward Smith, in his recent Lettsomian lectures, that the pulse rises often ten or twenty beats after a full meal; but when nourishment is taken in small quantities throughout the day, it is far more equable. Allusion was then made to a paper read before the Royal Medical and Chirurgical Society in 1861, in which Dr. SYMES THOMPSON had shown the great importance of keeping the

[1] Dr. Fox begs us to append to his remarks a fact which he omitted to mention to the Society, that he has notes of a case of acute inflammatory diarrhœa, which came under his observation some years ago, and of which he has preserved drawings of casts of the crypts of Lieberkühn, found in the intestinal mucus.

pulse at a low and even standard, and the influence of ozone, compared with digitalis and other sedatives. If acidity of stomach exists, it is due, not to an excess of gastric juice, but to a deficiency in its solvent principles, the mineral acids given at meal times relieve it, alkalies being prescribed in the intervals. Pepsine or rennet wine, when given with the acid, the quantity of food being at the same time limited, are similarly helpful, by setting on foot the changes in the conversion of food which the gastric juice is then able to complete.

The second form of phthisical dyspepsia, usually characterized at the outset by frontal headache, is not directly referable to an error in diet; but is dependent on unhealthy blood. The poison, like that of gout, seems gradually to accumulate, and gives rise to periodic attacks of sickness, followed by relief. The nausea and violent retching depend, as in sea-sickness, on a cerebral cause; and afford no evidence of stomach disease, but merely of reflex irritation. As the blood fails to supply the proper materials for healthy digestion, the appetite is lost, food is not absorbed, the tongue becomes furred, and all the secretions and excretions diminished; there is a feeling of melancholia and general *malaise*, which is often termed "biliousness" and constipation. The skin is dry, harsh, and inactive; and the urine is of low specific gravity. If this condition be allowed to continue, the morbid elements will soon be eliminated from the blood, and tubercle will be deposited in the lungs. The relief now afforded to the feelings of the patient on the establishment of sweating and expectoration is very great; the unnatural activity of the destructive processes gives rise to a sense of active vitality; and, in the place of general despondency dependent on retention of bile, urea, etc., from torpor of all the secretions, undue hopefulness and vivacity occur. Little can be accomplished in these cases by regulation of the diet alone; the main indication is to prevent, by eliminative treatment, the establishment of active lung-disease. We may begin with an emetic, with a mercurial and a morning aperient; aloes, in the form of a pill or compound decoction, is the best purgative. The good effect of the mercury, which it is rarely necessary to repeat, may be maintained by the persevering use of taraxacum with sarsaparilla. Sal ammoniac, with or without the tincture of the sesquichloride of iron (as suggested by the author's late father), seems well calculated to obviate hepatic congestion, and correct the condition of blood which characterizes such cases. Where the catamenia are absent or scanty, Griffith's iron mixture may be given with the decoction of aloes. It is often most satisfactory to see the dyspeptic symptoms yield under such treatment, and the indications of pulmonary phthisis pass away with them. The diet must at the same time be simple; milk and soda-water taking the place of beer, spirits, and coffee, for alcohol checks metamorphosis; but when we wish to encourage change, water is much better. Hence, the hydropathic system, or the hot-air bath, which calls forth to the full the eliminating power of the skin, may be serviceable. Yeast has been given with a view to check the malassimilation by which tubercular conditions affect the blood, and seems favourably to influence digestion, when the saccharine and farinaceous elements of the food are imperfectly disposed of. Its curative power in typhoid fever, erysipelas, and carbuncle, has long been recognized, and its power of diminishing purulent secretion is considerable. Dr. Thompson had lately found remarkable benefit from its use in two or three cases of excessive expectoration, when administered in tablespoonful doses three or four times a day. The power of yeast out of the body is limited to the conversion of grape sugar into alcohol and carbonic acid. Wine and spirits check secretion. Can the alcohol producing power of yeast account for its influence on the blood?

There is a third class of cases, the converse of that last described, in which there is no evidence of disordered digestion until tubercle is deposited in the lung and cough established. If now a fit of coughing occur soon after a meal, the contents of the stomach are rejected. This reflex vomiting being dependent on an abiding cause, is persistent, unlike that arising from the passage of a gall-stone or renal calculus, and is induced by the presence of unsuitable food, by a mental shock, or even a change of posture. Sometimes there is only dry retching, but more often the movement of the stomach leads to secretion from its coats, and a sour fluid is ejected. The gastric juice may be poured out in

consequence of reflex irritation without the occurrence of vomiting; and thus the digestive power is weakened, and the food is received by an exhausted organ, where it remains undigested, and, by its irritation, may lead to superficial ulceration. Thus, the lung-disease becomes of secondary importance to the stomach derangement which it has caused. To quiet the cough, allay the retching, and tranquillize the nervous system, hydrocyanic acid should be given, with or without morphia; and where the gastric juice is constantly poured out and unduly acid, carbonate of potash or soda, or liquor potassæ may be added. At the Hospital for Consumption at Brompton, the mistura gentianæ alkalina, which consists of carbonate of soda, with prussic acid, in infusion of gentian, is largely and successfully given in such cases. Bismuth, prepared chalk, and lime-water are valuable remedies, but where the cough is very severe and paroxysmal, the inhalation of a few drops of chloroform is most successful. The bromide of ammonium has been used with advantage in some cases. The diet should be light, and given at short intervals. Farinaceous foods, which are changed to sugar and then to acetic acid, and oily matters, whence the acrid fatty acids are developed, must be avoided when acidity of stomach is present. In atonic cases, meat is often digested better than slops or pappy food. In broth, when the fluid portion is absorbed, the nutritious part is often too soft and concentrated to excite the healthy action of the stomach. Tea and other hot fluids are apt to produce a sodden state of stomach, and give rise to flatulence, waterbrash, etc. It is rare to find sarcinæ in consumptive cases.

Where phthisis originates in disorder of the lacteal and lymphatic systems, direct evidence of indigestion may be wanting; but the body wastes, and it is evident that there is some fault in the blood-forming apparatus. A microscopic examination of the blood may aid in determining where the diseased action originates; a paucity of red and excess of white corpuscles indicates that the chyle transforming force is deranged, that there is either a deficient supply of "raw material," or the machinery needs cleansing or partial renewal.

In the treatment of these cases our main reliance must be placed on cod-liver oil, which, if it cannot be taken alone, in combination with an acid, bitter mixture, or in the form of emulsion with liquor potassæ, must be endermically introduced, by combining with the albuminous elements of the chyme, it feeds the blood with healthy chyle-granules, stimulates the capillary system, and invigorates all the functions of the body. Animal oils must be regarded as food, and if omitted in any case, cream, *pâtés de foie gras*, or other digestible oleaginous material, should be substituted. Mild chalybeates, as steel wine, or the reduced iron of the *British Pharmacopœia*, may help in building up the red corpuscles.

The author alluded to a number of cases, one of which was detailed, in which a peculiar form of dyspepsia seems consequent on the frequent administration of small doses of mercury. A case in which symptoms of intestinal obstruction and another in which gastric derangements alternated with lung-disease, followed, and the paper concluded with the observation, that while there is hardly a disorder that calls for more tact and judgment in the practitioner, there is none in which a familiarity with physiological chemistry is more important.

DR. THOMPSON, in reply to the various questions, observed that the dislike exhibited by consumptive patients for fat, contrasted curiously with the fondness of emphysematous persons for it. The blood, in the one case, was over oxidized, and in the other inadequately supplied with oxygen. Not only was a partiality for soles often exhibited, but oysters were specially appreciated by the phthisical. He mentioned that his father (Dr. Theophilus Thompson) had frequently used oleine extracted from various oils, but had not been so well satisfied with its effects, even when employed as an inunction, as with the oil itself. He had often used endermically, the neat's-foot oil with iodine, with good effect. Dr. S. Thompson had not found De Jongh's oil agree so well as that prepared from fresh livers; nor was he aware of any experiments or observations exhibiting the superiority of the putrid over the freshly prepared oil. De Jongh's was not the only oil made without pressure, which (he agreed with Dr. Leared) was injurious to the purity and utility of the preparation. He was astonished to hear, in the present day, that this oil did nothing more than put fat on the outside of patients. It had been shown to increase the number of

red corpuscles, and he appealed to the experience of every Fellow, whether it did not in many ways alleviate where it did not cure disease. He had not tried the bicarbonate of lime, but, from analogy with similar salts, would expect benefit from its use. Hydrochloric acid was often useful, and might be given at mealtimes when alkalies were indicated, the latter being prescribed in the intervals between meals.—*British Med. Journ.*, May 21, 1864.

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14. *On the Influence of Pleurisy in the Development of Phthisis.* By Dr. Beau.—In the hospital of La Charité is a patient whose case, though apparently of little importance, has given to Dr. Beau the opportunity of pointing out the influence which pleurisy seems to exert on the development of phthisis. Between these diseases there is a very close connection; often pleurisy merely supervenes upon phthisis: but it is not uncommon to see a pleurisy occur in a subject who, till then, has presented no rational sign of phthisis, and to see it followed by the development of that disease. This was the opinion of Broussais, who attributed to inflammation the formation of tubercles, and Dr. Beau has met with many facts which have led him to the same conclusion. Thus, in the case of the patient in question nothing indicated a year ago that he was tubercular. This winter he took a pleurisy, perhaps two; when admitted into La Charité there was still a little effusion into the left side, which remained persistent, and was accompanied with a little febrile excitement towards evening. A blister removed the effusion, but did not lead to the disappearance of the fever; the patient was then carefully ausculated, and the presence of tubercle was recognized in the left inferior scapular region. Cases of the kind are not uncommon. Dr. Beau had for his house physician a young man who contracted pleurisy; two years later he died tubercular. At this very time he has under treatment a patient whom two years ago he treated for pleurisy, and who is now tubercular. Many other examples could be quoted of tubercle supervening upon pleurisy. Is this any reason for treating these patients according to the system of Broussais? By no means; a very spare diet is bad because it debilitates, and an enfeebled state of the organism opens the door to all the diseases which afflict humanity.—*Edinb. Med. Journ.*, Aug. 1864, from *Journ. de Méd. et de Chirurg. pratiques.*

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15. *Smoking as a Cause of Fatty Heart.*—Dr. Henry Kennedy, in a paper read before the Surgical Society of Ireland, on fatty heart, makes the following observations on the influence of tobacco-smoking in its production:—

"I must notice one [cause of this disease] which has year after year been gradually forcing itself on my attention, till it has now reached the strongest conviction in my mind—I mean the habit of smoking, which, I believe, I have traced in many instances to have been the predisposing cause of the disease. No one is more aware than myself of the difficulties which beset a question of this sort, nor the great opposition which, for obvious reasons, it is likely to meet. Still, the opinion has not been taken up hastily, nor, as I think, without such proof as the subject admits of. All will recollect that within a very few years a great paper war was carried on in the pages of the *Lancet* on the effects of tobacco, and the opinions expressed were sufficiently contradictory. Amongst them all, however, I did not observe one point noticed which seems to my mind of great importance in this question. It is the fact that if any one, no matter what his temperament may be, gets out of health, so that the powers of his system are lowered, he must then either lessen his smoking or give it up entirely. I have met no exception to this statement, which every one may test for themselves—as, for instance, in cases of paralysis, no matter how slight they may be. From the fact, however, I conclude that tobacco, besides other effects, is a depressor of the nervous system, and that there is a constant antagonism going on between it and the healthy state of the constitution, and when used too freely it ultimately engenders a state of health which is very apt to be followed by a fatty heart. At any rate, whatever the explanation be, the fact is as stated above, and I have seen now too many cases of fatty heart, in what are called heavy smokers, to have any doubt on the matter.

"This day, 4th March, a case which strongly confirms some of the remarks

just made came under my notice, and for the third time. The patient, aged 34, is a man of full height, made in the very finest proportions, and remarkable, or at least was, for great physical strength and activity. He has always been strictly temperate as regards strong drink, but is the heaviest smoker I recollect to have met. About three months since he began, and without any cause he could discover, to lose flesh and strength very rapidly, and his wind, as he called it, became so short that he was compelled to give up active exercise. He now looked pale and depressed, having had a cold, which he found it hard to shake off. He told me he had, at my wish, twice tried active exercise since I last saw him. On the first trial he got through it but badly; on the second he was forced to give it up, as his breathing became so hurried and his heart beat so violently. It seems scarcely necessary to add that he had been driven to give up his darling tobacco.

"Except the pulse, there is nothing in this case to indicate disease. The two sounds of the heart are distinct and unattended by murmur. There is no increase of dull sound on percussion, nor can I say that the impulse varies from health. Whilst he sits, however, the pulse beats but 48 in the minute, and it was just the same from the first time I saw him. It is large and full to the finger, under which it passes slowly, and is readily compressed. Any movement at once increases the beats, and more than occurs in the healthy state.

"Now, in this case I have scarcely a doubt that the heart has become fatty, and most probably in the worst form: I mean where the muscle itself has degenerated. Yet, he tells me, he passed a physician and had his life insured just five months since!"—*Dublin Medical Press*, April 20, 1864.

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16. *Treatment of Apnœa from Chloroform, Drowning, &c.*—Dr. CHARLES KIDD, in a communication made to the British Association, extols the efficacy of the Faradization form of electricity, not applied to the heart, but solely to or through the respiratory muscles, diaphragm, phrenic nerve, &c., so as to assist or originate, apparently, the only true form of artificial respiration so desirable. "This form of electricity," he says, "cures hemiplegia, by renewing the vital activity of muscles paralyzed for a time by a clot in the brain; but the ordinary electricity is directed back along the nerve to the brain, already disordered, and does mischief, and near the eye, for instance, may cause total blindness. So that, where we have already the brain under chloroform, the 'Faradization' plan acts better by stimulating merely the diaphragm and other respiratory muscles; the mode of application found best in animals being an intermittent but gentle current passed through the phrenic nerve (where the omohyoid muscle *in the neck* lies at the outer edge of the sterno-mastoid) by means of the wetted sponge (not the dry sponge), the other pole or sponge also, as in this lady's case, wetted, applied somewhere about the floating ribs nearest to the diaphragm, or, still better, one or two acupuncture needles struck at once into the latter muscle, so as to excite alternate action of the current from the neck to the respiratory muscle, and imitate normal respiration. In animals this plan succeeds in a manner almost marvellous in restoring life where suspended animation exists.

"The patient, in the present case, was a poor married lady, otherwise in fair health, admitted to one of our private hospitals or 'homes,' who was operated on by one of the plastic operations on the female organs, so successful of late, thanks, too, in a great measure, to the calming influence of chloroform. Near the end of the operation, the author (Dr. Kidd), who watched the respiration and pulse all through its performance, was alarmed by both stopping, then going on again, but finally stopping with all the usual signs of death by chloroform; the woman, in fact, lay in a state that it might be said death had obviously set in; she was cold, pulseless, without motion or breathing, her face like stone. The utmost alarm was instantly felt. The so-called 'ready method' of Marshall Hall, as also the Sylvester method of artificial respiration, were persistently had recourse to; still, there was no pulse, no breathing, no animation. The lifeless or all but lifeless body, in a word, lay, as many of the animals poisoned by chloroform are seen to lie, till roused up by electricity. The author of the paper sent at once for the magneto-electric battery. Some confusion arose at first in its application, as the handles or poles were not insulated, and the author him-

self was receiving the shocks, till a German physician standing by happily caught the metallic handles with his coat-tails (non-conductors). This little incident is mentioned to show how totally unprepared for such accidents our London hospitals are. All the persons standing by, too, were solicitous that the electricity should be applied at once to the *heart* (error No. 2); but the directions of the author were, not to the heart at all, but to the phrenic nerve and diaphragm, as already described. The poor patient had now been lying some quarter of an hour pulseless, cold, and without breath, indeed pronounced 'dead.' Off and on alternately the moist poles were now applied about twelve times each minute, so as to imitate in somewise the stimulus of ordinary contractions of the diaphragm; and soon, to the delight of the operator and all around, a deep sighing inspiration was noticed at each break of the circle (this was a great relief), increasing in fulness till it was evident good respiration was established. No pulse, however, was yet perceptible, and cardiac action was still watched for with much eagerness. Minutes on minutes passed away as hours; the patient moaned at the excitement of the phrenic and a pin stuck into the diaphragm (the author's scarf-pin, as no other was to be had); but still it was thought desirable to continue the application of the electricity; there was soon a flicker of the pulse, but not till the expiration of two hours was the pulse quite re-established. It is worth being added that the woman quite recovered, and had no recollection whatever of the four hours her life was in the balance and under the surgical operation. The case, as already stated, is chiefly remarkable as fully bearing out the efficacy of this form of electricity, and applied only in this manner, as previously tried in hundreds of experiments on the lower animals. It has now been tried in four cases on the human subject. It places a serious responsibility on our London and other hospitals where the author's views have not yet been examined, and where deaths are occurring very often; nor is it the least valuable portion of the present researches that they seem applicable to all forms of apnœa, whether from drowning, or chloroform, or suffocation in coal-mines, or resuscitation of stillborn children."—*Glasgow Med. Journ.*, July, 1864, from *Trans. British Assoc.*, 1863.

17. *Pathology and Treatment of Aphthæ.*—In the *Gazette Hebdomadaire*, Dr. Jules Worms treats, in a recent paper, of a disease which is lost in the host of buccal affections described by modern authors. His subject is *aphthæ*—a denomination formerly applied to every superficial and acute irritation of the mucous lining of the mouth, and which Guersant, Billaut, and Gardien have shown to consist in a vesicular and ulcerous eruption of the mucous membrane, which runs its course in the period of one or two weeks.

From minute examination of the deposit on the surface of aphthæ, Dr. Worms concludes that it consists of a fatty matter, which is not to be found in any other disease of the mouth, and exclusively characterizes aphthæ. The epithelium rises and soon breaks, exposing to view a yellowish secretion, previously discernible through the transparent cuticle, and of which the microscope and chemical tests invariably show the sebaceous nature. It may, on the other hand, be remarked that aphthæ are never met with on the anterior portions of the mucous membrane, where anatomists have failed in discovering any muciparous glands, and where *herpes labialis* more commonly occurs; hence Billard's surmise that aphthæ are a disease of the mucous follicles, characterized by a peculiar sebaceous deposit, acquires additional probability.

In Dr. Worms's opinion, aphthæ are, therefore, but the *acne* of mucous membranes.

This practitioner infers from the solubility of the exudation in ether, that this substance may be a useful local remedy for aphthæ. The pain caused by the eruption, and the difficulty of checking its progress, are well-known features of the disease, and the inefficacy of cauterization, chlorate of potash, anodynes, and other methods of treatment usually prescribed, is very generally acknowledged. Dr. Worms has, on the contrary, resorted to ether with much benefit; this remedial agent removes the yellowish secretion, a new epithelium promptly forms, and no trace of the superficial ulcers remains beyond slightly increased vascularity of the mucous membrane. Either may, therefore, be applied locally with advan-

tage, but the fact of the frequent connection of aphthæ with gastric disturbance must at the same time be borne in mind.—*Glasgow Med. Journ.*, July, 1864, from *Journ. Pract. Med. and Surg.*

18. *Thoracentesis in Pleuritic Effusion.* By Dr. BEHIER.—A long discussion on thoracentesis has occupied the Medical Society of the hospitals of Paris; and as the debates were not free from a certain degree of confusion, Dr. Behier has made a critical review of them, the conclusions of which may be thus briefly stated.

Thoracentesis is indicated and ought to be performed: In all cases where the effusion is in large quantity, and does not diminish rapidly under the ordinary means, and still more if it goes on increasing; in all cases where the patient appears too delicate, too weak to bear up against the long process of resorption of an effusion which occupies completely or nearly completely one side of the chest; in all cases where, although the effusion is not very copious, we find the opposite lung impeded in the performance of its function, as by bronchitis, a certain degree of œdema, etc.; in all cases where we believe we have to do with a patient predisposed to pulmonary phthisis, whether we are unable to make out its existence, or whether we have the proof of it in the side occupied by the effusion, or in the other lung. The last case we willingly allow is by no means favourable.

Before practising the operation, we wait, if possible, until the inflammatory phenomena have abated; it is generally between the ninth and the eleventh days that we expect to see this abatement. At the same time, it must be borne in mind, that inflammatory symptoms may be altogether absent, or at least very little marked in a large number of cases of copious effusions, and that it is precisely in these cases that sudden deaths are most frequent, as they are also those which recover best after thoracentesis. To refuse the operation in such circumstances on account of the slight apparent gravity of the disease, and because we observe neither violent dyspnœa nor imminent asphyxia, would be, in our opinion, a grave fault on the part of the physician. These cases frequently occur in persons of little vital energy; their very passiveness is often an obstacle to their cure by ordinary means. Little capable of undergoing the process of absorption, we ought to aid such patients in the process, and thoracentesis affords this indispensable assistance.—*Edinb. Med. Journ.*, Aug. 1864, from *Journ. de Méd. et de Chirurgie pratiques.*

19. *Treatment of Albuminuria in Children.*—Dr. W. H. DICKINSON read before the Royal Medical and Chirurgical Society (May 24) a paper on this subject.

The granular kidney appears to be unknown in childhood. The only form of disease which produces albuminuria at this period of life is that which produces enlargement of the kidney and gives it a smooth mottled exterior. This is, in fact, a renal catarrh. The tubes become obstructed by an excess of their own epithelial growth, and hence arise all the evils of the disease. If only there is a free escape for the contents of the tubes the vascularity of the gland will be relieved by secretion, and the disorder will soon be at an end. The principle of treatment must be to send as much water as possible through the organ. This fluid is devoid of irritating properties, and probably passes through the gland rather by filtration than true secretion. With these views the patients were restricted to a fluid diet. They took from two to four pints of distilled water daily, and small doses of the infusion of digitalis. When the active symptoms had subsided iron was given. Twenty-six cases were adduced in which this treatment had been pursued. Twenty-two recovered completely; three were lost sight of while improving, but while still having a small quantity of albumen in the urine; one case did badly, and eventually died under other treatment. Many of the cases were of great severity. These results appear better than those afforded by other methods. Among the in-patients at the Children's Hospital otherwise treated, 11 died out of 39; and of 69 cases treated by Dr. Miller in Dispensary practice, 8 died. It was found that on an average the little patients were restored to apparent health in 30 days, while 15 days

more were needed to get rid of the last traces of albumen. The use of the water did not seem in any case to increase the dropsy, but the contrary. It was usual, however, when the swelling was great to let the digitalis set up a certain amount of diuresis before ordering the full quantity. The subsequent use of iron was believed to correct the effects of the disease, without influencing the disease itself. On the occurrence of secondary disorders, such as convulsions, or acute inflammatory attacks, it was argued that the treatment of the renal mischief should be sedulously persisted in, with such additions as might be called for. The anæmic state of brain in uræmic convulsions, and their frequent occurrence after the exhaustion of diarrhœa or vomiting, were urged as reasons for abstaining from depressing remedies. A case was cited in which, under these circumstances, small doses of opium had been used successfully. A case was also given in which acute pleurisy had passed off under the use of only local measures. The paper professed to deal only with the albuminuria of childhood.—*Med. Times and Gaz.*, June 4, 1864.

20. *Apiol in Amenorrhœa and Dysmenorrhœa.*—Dr. Marrotte has published a work on the utility of apiol (the active principle of parsley) in the treatment of these affections. Dr. Corlieu gives (*Gazette des Hôpitaux*) an abstract of this publication, and adds the results of his own experience during eight years, and points out the cases in which it may be expected to be useful.

A. In all cases where the menstrual disorder depends upon the derangement of a vital element, where there is plethora or anæma, apiol should not be used, for, being a nervous tonic, it will only aggravate the condition of the patient. But if the condition of chlorosis be removed, apiol may be prescribed with a good prospect of success. The following case will illustrate this: A lady, thirty-eight years of age, of a lymphatic and nervous temperament, had suffered for three months from amenorrhœa, complicated with extreme chlorosis. Dr. Galligo at first ordered apiol, but without success. At a later period he combined it with chalybeates, which had previously done no good. The combined use of iron and apiol effected a cure. Dr. Marotte relates the following case: Miss C., eighteen years old, was of a lymphatic temperament. In childhood she had had measles, hooping-cough, and modified smallpox. Her skin was of a dead white, her face somewhat swelled; the gums were swelled and discoloured; she had very little appetite, and often vomited her food. She menstruated first when fourteen years old; for several months the discharge was white, afterwards it became of a reddish colour, but was accompanied by such severe uterine pains that she was obliged to keep her bed. As she was to menstruate on the 18th of October, I ordered her two capsules of apiol on the 15th, two on the 16th, and two on the 17th. On the 18th the menses appeared though still in small quantity, but unaccompanied by colics or uterine pains; they only lasted two days, and the blood was still very pale. On the 21st I ordered a chalybeate, which was continued till the 18th of November, when she resumed the apiol for three days. The menstruation was unaccompanied by pains; it continued three days, and the discharge was more coloured and more abundant.

B. When the menstrual disorder depends upon a diathetic condition (dartres, scrofula, etc.), we must by means of a specific treatment, such as bitters, cod-liver oil, preparations of iodine, sulphur, or arsenic, attack the principal malady. Apiol is of no use at first in these cases; but when the cure of morbid diathesis has been effected, it may be employed with advantage in stimulating the torpid menstrual function.

C. But it is chiefly in disorders which are under the influence of the nervous system that apiol is a heroic remedy, leaving far behind it all the emmenagogues hitherto employed. As a neurotonic it supplies to the nervous system the energy it has lost. Change of life, of habits, or of climate often determine amenorrhœa. This is a fact which must not be forgotten, and which is well known to the physicians of boarding-schools and religious houses. This menstrual suppression is transitory; it lasts some months, and sometimes only gives rise to slight nervous disorder, or a slight oddity of character. In these cases, two, four, or at most six capsules of apiol will restore the menstrual flux.

The sudden application of cold during a menstrual period may suppress the

discharge abruptly, and give rise to amenorrhœa, which may last for an indefinite time. In the month of January, 1861, I saw a young lady, seventeen years of age, who had menstruated for two years, but in whom, in consequence of a chill during menstruation, the flow was suppressed. The belly became considerably enlarged; there was, in fact, an ascites, which could only be explained by the amenorrhœa. There was no albumen in the urine. I employed, without success, purgatives, sudorifics, chalybeates, and the ordinary emmenagogues. There was considerable pain at what should have been the menstrual periods. This state continued until the end of April. In May, capsules of apiol given night and morning restored the discharge, though at first it was pale and serous. Iron was continued, and from that time the abdomen diminished in size. The cure was complete.

The point I wish to establish is, that apiol is the best emmenagogue with which we are acquainted in all cases where amenorrhœa or dysmenorrhœa have their origin in a disturbance of the nervous element. The principal condition for success in the use of apiol is in the choice of the proper moment for its administration. In almost all cases of amenorrhœa or dysmenorrhœa which depend upon an organic cause, the use of apiol is contra-indicated. This is not the place to lay down the differential diagnosis of these conditions. If apiol has succeeded in some cases of plethora, it has been because the plethora was not very considerable. "In order," says Dr. Marrotte, "that apiol may succeed, it is an essential condition that the pain which accompanies menstruation depend upon dysmenorrhœa, properly so called, that is, on the vaso-motor innervation of the womb. It has never succeeded in calming nervous pains, dull or acute, which were seated in branches of the lumbo-sacral nerves, and especially in the uterus, pains which appear or become exaggerated at the menstrual period, and may at first sight simulate dysmenorrhœa proper." Another condition for success in use of apiol consists in choosing a time for its administration corresponding to a menstrual period. If the woman has not properly calculated the period, we may be enabled to discover it by noticing the sympathetic derangements which occur under these circumstances.—*Edinburgh Med. Journ.*, Aug. 1864.

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21. *Counter-Irritation with Tincture of Iodine in Neuralgia.*—In a clinical conference at the Children's Hospital in Paris, M. BOUCHUT relates several cases which illustrate the efficacy of this mode of counter-irritation in cases of neuralgia.

The first case related was that of a lady, aged fifty, who for six months had been prevented by intercostal neuralgia from wearing stays. The painful region was painted over every day with tincture of iodine during a week, and at the expiration of that period a complete cure was effected.

Another, and very corpulent lady, had for three years suffered from a stitch in the eighth intercostal space, in front of the short ribs. The same treatment was instituted, with perfect success.

A dyspeptic and hypochondriac subject affected with præcordial neuralgia, considered himself threatened with disease of the heart. Daily applications of tincture of iodine were prescribed, and the pain subsided; a relapse took place, and again the remedy, perseveringly resorted to with sufficient energy to cause desquamation, removed the neuralgia, which then disappeared altogether.

In some cases of obstinate intercostal neuralgia the patients imagine the symptom to be the indication of pulmonary tuberculosis. A lady, subject to bronchitis, had for twelve months suffered from a neuralgic pain of this description, and conceived herself to be consumptive; she resorted, by advice, to the Eaux Bonnes, but returned to Paris without having experienced any improvement. M. Bouchut applied the tincture of iodine, relieved the pain, and the much-dreaded thoracic disease was cured at the same time.

Neuralgia of the breast is to many women a cause of very great uneasiness, especially when the organ contains the small indurated lobules which M. Velpeau designates under the denominations of adenoma, or irritable tumour of the mamma. In these cases the patients are haunted by the fear of cancer, and M. Bouchut has had several opportunities of testing the efficacy of the tincture of

iodine; applications daily repeated for eight or ten days have often succeeded in calming the pain, and in reassuring the patients.

In another case of a singular nature the neuralgia was accompanied by delusions of the sense of hearing, and the pain was so intense that the sufferer, tormented by hostile imaginary voices, and much alarmed by her symptoms, seemed bent on self-destruction. M. Bouchut removed the pain in a few days with the tincture of iodine, and this lady has since recovered from her melancholy mental condition.

M. Bouchut adduced several cases from which it appears that all varieties of neuralgia may be benefited by the treatment he recommends.

A little girl was afflicted with supra-orbital neuralgia; for three days in succession tincture of iodine was applied over the brow to a surface not exceeding the size of a sixpenny piece, and a cure was effected.

M. Bouchut further related two instances of hemicrania, with photophobia and vomiting, in which the symptoms yielded to the same remedy. He also brought forward a case of sciatica observed in a naval officer; the pain was chiefly apparent at the head of the fibula and near the tendo-Achillis. Both regions were touched with the tincture, and the sciatica disappeared.

Blistering might possibly have proven equally beneficial; but the application of blisters is not always possible, and tincture of iodine is a valuable and convenient substitute.

Thus, when M. Bouchut was attached as physician to the Hôpital Sainte-Eugénie, he was consulted by a lady, residing at Charenton, for neuralgia in the occipital region. The patient was naturally desirous of preserving her hair, and instead of a blister, tincture of iodine was prescribed. The desired effect was produced after desquamation of the cuticle, and the hair was not injured.

As an instance of numerous and successive attacks of neuralgic pains, we may adduce the instance of a lady who, during her monthly period, wearing a crinoline and insufficient under-clothing, caught cold; the menses were checked, and retro-uterine hæmatocele followed. She was treated in an appropriate manner, and recovered her health; but pains supervened in the pelvis, between the shoulders, and in the intercostal spaces. The inter-scapular neuralgia had lasted eight months, when by M. Bouchut's advice, tincture of iodine was applied every day for a week; the treatment was very painful, but its results were perfectly satisfactory. Iliac neuralgia subsequently occurred; the same remedy was resorted to, but not with sufficient perseverance to secure permanent relief. Indeed, the method cannot be successful unless a predetermined action is induced, which hitherto can only be estimated by desquamation of the cuticle.

This is not a new mode of treatment. In pulmonary consumption, and in chronic pleurisy, the same procedure has been highly recommended for the relief of the pains which frequently accompany these affections. The method was introduced into practice by M. Blache, has since been very generally adopted, and is now acknowledged to be highly serviceable. This eminent practitioner, and also M. Van Holsbeck, in Belgium, and M. Magne, in Paris, have substituted, with much benefit, tincture of iodine for the blisters formerly applied around the orbit, for the purpose of removing the photophobia which accompanies scrofulous ophthalmia, and interferes with the needful inspection of the eyeball. This object is most satisfactorily attained by painting over the lids, forehead, and temples every second day with the tincture, and the tendency of blistered surfaces in hospital to become the seat of diphtheria is thus ingeniously neutralized.

The efficacy of tincture of iodine for the cure of arthritis and of chronic articular rheumatism is well known to our readers. "These applications made morning and evening, once a day, or once every other day," says Boinet, "operate favourably on several of the elements of disease of the joints, *promptly allay pain*, and hasten the absorption of effused liquids." The same author remarks that by this method alone he effected a cure in two cases of chronic sciatica which had lasted the first four, and the second six months.

We may, however, be permitted to observe that this local medication has been more or less suggested by the idea of the specific virtues of iodine for the cure of scrofula, tuberculosis, and rheumatism; indeed, in most instances the

general treatment simultaneously prescribed bears witness to this pre-occupation, and on this piont the originality of M. Bouchut's views becomes more apparent. In prescribing as a general rule tincture of iodine locally, this practitioner has not in view the removal of a diathesis; he takes into consideration the pain only, and represents tincture of iodine solely as a means of allaying the suffering and as a mere counter-irritant.

Indeed, counter-irritation is the method of treatment which for centuries has been chiefly resorted to in neuralgia. Thus, congestive irritants, such as mustard; vesicants (cantharides and ammonia); ulcerative irritants, such as clematis, certain varieties of ranunculus, euphorbia, lathyris, nettles, croton-oil, tartar-emetic ointment, &c.; other irritants, viz., delphinia, colchicina, veratria, which without causing any redness of the skin induce a thrilling sensation, which Mr. Turnbull not inaptly compares to the action of electricity, electricity itself, especially inductive; acupuncture, escharotics, and the essential cautery, are all obviously counter-irritants, and each has been, and is still, found occasionally efficacious.—*Ranking's Abstract*, Vol. XXXIX.

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22. *A Peculiar Form of Neuralgia not yet described, excited by a Desire to pass Water and by Micturition.* By Dr. PUTÉGNAT, of Lunéville.—The following two cases, out of six published by the author, will give an idea of this peculiar neuralgia, which consists, on the one hand, in a special sensation in the bladder, and on the other, in symptoms of a neurosis of the ulnar nerve.

CASE 1.—M. X——, aged fifty, with chestnut hair, of a nervous and sanguine temperament, very abstemious, in affluent circumstances, leading a very active life, occupying very healthy apartments, free from all diathesis, except a slight rheumatic affection, liable to coryza in cold, damp weather, has never had any other nervous complaint beyond headache and occasional gastralgia, after eating dressed salads or raw fruit.

From time to time, at varying intervals of weeks, months, and even years, without any apparent physical or moral cause, in all electric, barometric, and thermometric conditions of the atmosphere, as soon as his bladder was full, and he had a strong desire to pass water, he feels along the urinary passages, especially in the perineum, a peculiar sensation of numbness, not very painful, but acute, burning, lancinating, and unpleasant from the accompanying sense of prostration. This strange sensation next affects the shoulders, comes down both arms, along the course of the ulnar nerve only, and gives rise in the forearm, the little and the ring fingers, to the same sensation as when the ulnar nerve is strongly compressed at the elbow. The pain is more acute on the left than on the right side, lasts about twenty or thirty seconds, and after diminishing gradually, disappears without leaving any trace behind it.

CASE 2.—M. X——, of Lunéville; living in healthy rooms; very active; easily moved and excited; subject to headaches and to rheumatic pains; free from any diathesis; very abstemious; complains, for several successive days, but at irregular intervals, and without any known cause, of a strange sensation along the outer border of the left forearm, on the inner side of the thumb and the outer surface of the index finger especially. This sensation he compares to the one produced in the two last fingers of the hand by compression of the ulnar nerve at the elbow.

The painful sensation only comes on whenever he has a strong desire to pass water, persists during micturition, and ceases completely immediately afterward.

On analyzing the six cases of the author, we find four of them to have occurred in females. The mean age of the patients is forty-six: the oldest being fifty-two, and the youngest thirty-six years old. They are all in easy circumstances; five occupy healthy apartments, the sixth alone, damp rooms on a ground-floor. Three patients have had gastralgia; the fourth, sciatica, and great troubles have shaken his nervous system; the fifth is subject to violent headaches; and the sixth, a female, seems to have epileptiform seizures, and has a double neuralgia. From the above, then, it may be concluded that neuralgia, and great nervous excitability, are predisposing causes of this strange neuralgic affection.

In one of the four female patients the catamenia had ceased; in three they had not, and in two of these the neuralgia showed itself before and during the menstrual periods.

Uterine congestion seems then to be a predisposing cause also.

Four of the six patients had had rheumatic pains; but the other two, having never suffered from such pains, cannot be considered as the exciting cause of the neuralgic affection.

The desire to pass water, and especially micturition, bring on the sensation, which only appears at those stated times, and it reaches its maximum intensity at the beginning of micturition. It has all the characters of neuralgia, and can even aggravate, as in one case, an already pre-existing neuralgia—that of the median nerve.

As to the precise seat of the sensations, we find them affecting the four extremities of one patient, but the upper limbs only of the remaining five. In three cases they simulate to perfection neuralgia of the ulnar; and in two they are felt in the tips of all the fingers. In one case they coincide with and intensify pains in the course of the median; and lastly, as in the first case we have given above, they are felt in the distribution of the left radial nerve.

The first patient complains of pain in both shoulders, especially the left; the fourth, of pain in both arms and hands, but chiefly in both breasts, and in the left breast more than the right; the sixth, again, of pain in both forearms and hands, but more marked on the *left* side. Hence, the left side of the body would seem to be either the only one affected, or the one most affected.

The patients always distinguished clearly the special painful sensations felt in the urinary passages, from the normal sensations due to a distension of the bladder and the subsequent desire to pass water.—*Ranking's Abstract*, Vol. XXXIX., from *Gaz. Hebdom. de Méd. et Chirurg.*, April 15th, 1864.

23. *Ataxie Locomotrice Progressive.*—Vidal (*Gaz. des Hôpit.*, 127, 1862), Duguet (*L'Union Méd.*, 122, 1862), and Herschell (*Bull. de Thérap.*, Oct. 1862), record cases of this successfully treated by nitrate of silver. Vidal's patient was æt. 45, addicted to sexual excess. The lower extremities alone were affected. He had constant hyperæsthesia of the skin, with diminished tactile sensibility; loss of muscular sensibility, without impairment of muscular power; paralysis of the sphincter ani and of the virile power. The movements of his legs were unsteady and not co-ordinated; he could not walk if his eyes were closed. After taking argenti nitr. in daily doses of one to two-thirds of a grain for about two months, he recovered to a great extent. Duguet's patient was a female, æt. 39, who had been much weakened by frequent losses of blood, and became very anæmic. Epileptic attacks ensued, and recurred several times. It was now found that she had the symptoms of ataxic loc. progr., but limited to the right arm and leg. The movements of both these limbs were quite un-co-ordinated; the patient was quite unable to walk. The tactile sensibility of the whole right half of the body was very dull, but that of temperature was normal; electric sensibility and contractility were not impaired. Amblyopia existed, and the mental faculties were weakened. After three months' treatment with nitrate of silver the patient had in a great measure recovered the use of the right arm and leg, her memory and speech had much improved, only the vision was in nearly the same state. Herschell's patient was a rope-maker, æt. 47, who was almost completely amaurotic, had nearly lost the power of motion and sensation in his lower limbs, and to some extent also in the upper. He was completely restored after about two months' treatment.—*Sydenham Soc. Year-Book*, 1863.

## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

24. *Causes of Hernia.*—Mr. J. A. Kingdon read a paper before the Royal Medical and Chirurgical Society (June 28) the object of which was to call in

question the accuracy of the prevailing opinions concerning the causes of hernia. Instead of its being due almost entirely to mechanical causes, as most writers since the time of Scarpa have held, the author endeavoured to prove that hernia was the result of an abnormal condition of the peritoneum in its entirety, either from congenital malformation or inherent disposition to be relaxed. Without disputing the majority of the arguments that favoured the mechanical theory, the author attempted to show that mechanical causes could not operate without antecedent derangement of the peritoneum. So long as the mesenteries remained unrelaxed, in healthy bone, and with their normal attachments, the author held that hernia not only did not, but could not, occur, and that there was no disposable force that could stretch the mesenteries and dislodge the viscera. But when, from congenital defect or subsequent derangement, the mesenteries allowed the intestines to descend in the cavity of the abdomen below their proper sphere, then mechanical causes could act—then the arguments of those who advocated the mechanical theory would apply; protrusion would then be due to loss of equilibrium between the muscular parietes and the rings, but not till then. The author further attempted to show that hernia was fundamentally an affection of the peritoneum generally, by pointing out that the condition of the parietal layer determined the kind of hernia—*i. e.*, the aperture through which it escaped. The facts and arguments in support of these views were set forth in the paper.—*Med. Times and Gaz.*, July 30, 1864.

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25. *Origin, Structure, and Mode of Development of Multilocular Cysts of the Ovaries.*—Dr. WM. FOX read a communication on this subject before the Royal Medical and Chirurgical Society (June 28). The first division of the paper consists of a *résumé* of the views heretofore held with regard to the origin of these cysts. The author considers that the opinions hitherto expressed on this point may be divided into two chief classes. 1. Those which attribute the cysts of the ovary either to morbidly affected Graafian vesicles, or to secondary formations from these structures. 2. Those which ascribe the multilocular forms to a morbid process arising in the stroma of the ovary, independently of the Graafian vesicles. Under the second category there is a great variety and discrepancy of opinions. With regard to the former it has long been doubted whether the number of the Graafian follicles normally existing in the ovary is sufficient to account for the whole of the cysts sometimes found in these tumours; while the proof of any fresh formation of Graafian vesicles taking place in the adult has hitherto been of a very dubious kind, nor has any account been furnished of the mode in which secondary cyst formations proceed from them. The author has studied these conditions in fifteen of the so-called "colloid cysts" of the ovary, for the opportunities of examining most of which he has been indebted to the kindness of Mr. Spencer Wells. He believes that all primary cysts of the ovary originate in the destruction of the ovum and subsequent accumulations of fluid in the follicle, the membrana granulosa acting as a secreting structure. From these cysts secondary cysts may originate in various ways, all of which, however, may be referred to one common type. Class A.—Cysts give off long tubular processes, lined by an epithelium similar to that of the cyst whence they spring; one cyst may give off two or three such processes at various parts of its circumference. These undergo constrictions in their course, and thus form secondary cysts. These processes and the cysts from which they spring are most easily found in the more dense parts of the stroma. Class B.—Thin-walled cysts give off diverticula analogous to those by which the lungs, the thyroid, and some other glandular organs, both of the gusto-pulmonary and genito-urinary system, originate in the embryo. These diverticula, when open by a narrow neck into the cavity of the parent cyst, expand as large pouches on its external surface, protruding into other and adjacent cysts. The neck may either expand into a large opening or may become constricted, in which latter case the original communication is destroyed. One cyst may in this manner give off numerous diverticula. These varieties (A and B) usually coexist in different parts of the same tumour. They were found by the author in three out of the fifteen tumours examined by him. They give rise to very compound structures, but not to the

dense masses to which the names of "alveolar degeneration," "cystoid disease," and "adenoid tumours" of the ovary have been given. This variety (or Class C) results from the formation, on the inner surface of the cyst wall, of a series of tubular glands, analogous to those of the uterus, or the crypts of Lieberkühn. or the glands of the stomach. They are formed by the (1) epithelium lining, the parent cyst becoming stratified, and in its superficial layers assuming a columnar character. (2) Into this stratified epithelium, papillæ formed of connective tissue spring from the stroma of the ovary, in each of which a loop of vessels is formed. A series of densely-clustered villi is thus produced, which are converted into tubular glands by the growth upwards around these bases of the stroma of the ovary. The glands may become compound at their bases by secondary villi arising in them. They may be converted into simple cysts by the closure of their orifices; but more commonly the upward growth of the stroma surpasses that of the villi in which their summits end, and the glands become completely shut off and inclosed in the stroma, forming groups of a very compound form, of tubular structure, lined by a secreting epithelium imbedded in the wall of the parent cyst. When distended by further secretion they form the smaller and larger multilocular cysts scattered on the inner wall of the parent cyst. Other modes of cyst-formation resulting in dense cystoid masses were traced by the author to these structures. Class D refers to the cyst found in the cauliflower papillary or denditric growths which spring from the interior of parent cysts. These growths originate in a number of delicate papillæ growing from a common basis, and uniting to form larger masses. They consist of a delicate stroma, derived from that of a parent cyst-wall, a loop of vessels, and a covering of epithelium. The irregularity of their growth causes spaces to be inclosed by them, lined by a secreting epithelium, and which, when completely shut off, become cysts. Various illustrations were given of this process. The author considers that in no case are the secondary cysts in the cauliflower growths of the ovary derived from single epithelium cells. The author then referred to the observations of Drs. Pflüger and Billroth on the origin of the Graafian follicles from tubular structures found in the embryonic condition of the ovary; and though not fully able to corroborate all Dr. Pflüger's views from his own observations, he has convinced himself that the Graafian follicles originate in tubular structures. He regards these cysts as resulting from a renewal in the adult of the early mode of development of the Graafian vesicle with various morbid aberrations from the type of embryonic growth, and thinks they must therefore be placed in the same category with other cystic tumours growing in structures having tubular glands and ducts, especially with those of the mamma, testicle, and thyroid gland. He regards the cysts mentioned under Class D as presenting essentially the same type, inasmuch as the large papillary and cauliflower masses can only be regarded, similarly to the Haversian fringes of synovial membranes, as everted glandular structures. He has not had any opportunities of examining any multilocular cysts of the ovary containing dermoid structures; but, inasmuch as these have been shown to contain both normal hair follicles and sebaceous and sudoriparous glands—all of which structures are the frequent seat of cyst formations—he believes that they will be proved to follow the same laws of growth as the colloid cysts. The author, from chemical examinations of the fluid contents of the cysts, has been led to regard the so-called colloid matter found in them, as the result of alterations depending on the varying conditions of pressure under which they are secreted from the inner surface; and he believes that this matter cannot be considered as the result of any special form of degeneration of the tissue of the ovary. The method which the author has pursued in studying the development of the cysts of the Classes A C D has been to make sections in the recent state with a Valentin's knife through the various parts of the stroma. The glands of Class C are best displayed by sections made vertically to the inner surface of the cyst-wall. Observations on Classes C and D are much facilitated by hardening the tissues in chromic acid solution of 2 per cent., and subsequently treating sections made by a sharp razor with liquor of soda and glycerine.—*Med. Times and Gaz.*, July 30, 1864.

26. *Influence of a Long Course of Nitric Acid in reducing the Enlargement of the Liver and Spleen that sometimes results from the Syphilitic Cachexy.* The enlargement which Dr. G. BUDD refers to, is that which has been latterly described as due to amyloid degeneration. The most striking examples of it are seen in the victims of scrofulous or syphilitic caries. Three cases are related in which ηLxx of dilute nitric acid were taken ter die for a period varying from fifteen to four months, without inducing excessive acidity of the urine or any inconvenience attributable to undue acidity of the stomach. Sarsaparilla, iron, or bark, were conjoined with the acid. The result of his experience leads Budd to conclude that when the liver and spleen have become diseased in the manner specified, in sequel to protracted syphilitic disease of the bones, nitric acid, long taken, has a remarkable influence in gradually effecting the removal of the morbid deposit to which these organs owe their increased size, restoring the organs to a more healthy condition, and improving the general health. The cases further afford a strong presumption that nitric acid, taken earlier, would prevent the disease of the abdominal glands, which, when established, it tends to remedy. It is, however, essential that the disease of the bone, on which the enlargement of the liver and spleen is consequent, should be arrested; if this cannot be effected, the malady, though even then its course may be retarded, usually makes progress, and life is cut short by renal disease, which very often accompanies that of the liver and spleen. Budd suggests that a long course of nitric acid may have influence in remedying and preventing glandular enlargements, chronic ulcers, and other forms of scrofulous disease. He is persuaded that in tuberculous disease of the lung nitro-muriatic acid, long taken, tends to prevent the further deposit of tubercle.—*Sydenham Society's Year-Book*, 1863, from *Brit. Med. Journ.*, Sept. 5, 1863.

27. *The Efficacy of Phosphate of Lime in Periostitis.*—The *Journal de Chimie Médicale* relates two cases of osteitis, attended with intense pain, in which Professor PIORRY resorted with much benefit to the exhibition of phosphate of lime. In one patient the tibia and humerus were the seat of a circumscribed tumefaction and severe nocturnal pain. On superficial examination the osseous structures seemed to have preserved their natural consistency, but plessimetric percussion of the affected parts betrayed a loss of elasticity, and an increased sonorousness of the bones. The precedents of the case being of a nature to indicate the presence of the syphilitic taint in the system, the professor prescribed half a grain of protoiodide of mercury night and morning, fifteen grains of iodide of potassium three times a day, and the application of anodyne poultices. This treatment was steadily persevered in for three weeks, but the pain continued with unabated violence, when M. Piorry, taking into account the swollen and softened condition of the bones, conceived that a couple of drachms of phosphate of lime exhibited daily, concomitantly with the iodide of mercury, might possibly prove advantageous. This treatment was therefore instituted, and the issue of the case justified the professor's surmise. In the course of forty-eight hours the osteocopes had much decreased, and disappeared altogether after an interval of a week. The patient being at the same time an anæmic subject, with a small heart, contracted liver, and a weak pulse, which failed when the arm was kept in a raised attitude, tonics and a generous diet were likewise resorted to.

The second patient complained of excruciating pains in the left temporal region, which were at first attributed to neuralgia of the fifth pair of nerves, and treated accordingly, but without benefit, by the application of blisters dressed with morphia, and belladonna and opium internally. On closer inspection, M. Piorry discovered, on parting the hair, which was very thick and concealed for a time the true nature of the case, a considerable periostic tumour at the base of the parietal bone. In this instance, also, the plessimeter revealed more sonorousness and less elasticity than on the opposite side of the head. The patient, however, contended, and nothing in her previous history disproved her affirmation, that she had never been affected with any symptom of venereal disease. A drachm of phosphate of lime was exhibited night and morning, and

the pains decreased in the course of four days, and in a short time a cure was effected.

In both these cases, the reader will observe that the plessimeter was used to discover the softening of the bony structures, and that in the patient whose previous history pointed to syphilis, the use of the calcareous phosphate was in nowise incompatible with the administration of mercurial preparations. We may further add, with the editor of the *Journal de Chimie Médicale*, that the appropriate salt of lime is the combination obtained by the precipitation by ammonia of a solution of the phosphate in muriatic acid; the deposit should be carefully washed, and preserved in a humid condition.—*Dublin Med. Press*, Feb. 24, 1864, from *Jour. de Méd. et Chir.*

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28. *Treatment of the Bites of Venomous Reptiles and Insects, and of Dissection Wounds.*—Dr. Julius Lemaire highly extols the efficacy of cauterization with phenic acid in the treatment of all poisoned wounds. He states also that moist gangrene may be arrested by the same application. M. L. claims that in all these cases cauterization by phenic acid is more effectual than by the actual cautery, or by any other caustic.

Two or three drops of the acid applied to a puncture are sufficient to arrest the dangerous effects of the poison. In cases of bites or wounds the acid should be applied to the whole of the wounded surface.—*Le Moniteur Scientifique*, Aug. 1, 1864.

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29. *Successful Primary Amputation at the Hip-Joint.*—Mr. James Spence records (*Edinburgh Medical Journal*, July, 1864) the following very interesting case of this:—

"On the 3d of September, 1863, Robert Davidson, aged 12 years, was thrown from a truck which had been suddenly set in motion, and fell in front of it, both wheels passing obliquely over the upper part of the left thigh just below the pelvis. The accident happened at the Melrose station, and the boy was seen almost immediately by Dr. Clarkson, who adjusted the limb, and had him conveyed to his home at Newstead, about a mile distant. About two hours afterwards, Drs. Brown and Smith accompanied Dr. Clarkson to see the case. The boy had recovered in a great measure from the shock, but his pulse was still very weak. On examination, there was found a large contused flesh wound at the upper and inner part of the left thigh, exposing the muscles, which were much torn and bruised, and allowing the finger to be passed deeply into the tissues of the limb. The femur at and below the trochanters was felt to be much shattered. The foot was cold, and pulsation in the popliteal and tibial arteries extremely weak, but there had been no great amount of blood lost.

"As it appeared to the medical attendants that the boy's only chance of life was removal of the limb by amputation at the hip-joint, I was telegraphed for, and arrived at the patient's house about 9 P. M. On examination of the injury, the contused and lacerated state of the soft parts, the shattered condition of the femur, and the consideration of the great force by which the injury had been caused, left no doubt as to the practice to be pursued. I at once coincided in the opinion which his medical attendants had expressed, although, from the depressed state of the young patient, and the proximity of the injury to the trunk, the chances of success seemed very small.

"The boy's parents having given their consent, I proceeded to perform the operation under circumstances not the most favourable. The room was small, and the only light procurable was from a small lamp on the mantelpiece, and two small candles held by a non-professional assistant; a wax taper I had brought with me was kept in reserve for exigencies. I had brought Lister's abdominal compressor, but as it could not be applied so as to command thoroughly the circulation, Dr. Smith took charge of compressing the common femoral on the brim of the pelvis, and I instructed one of the patient's friends how to command the bleeding from the posterior flap, by grasping it with one hand and pressing a large sponge upon its surface. Dr. Brown took charge of the movements of the limb, whilst Dr. Clarkson administered the chloroform. When the boy was brought under its influence, I entered my knife between the trochanter

major and the anterior superior spine of the ilium, and carrying it obliquely across the thigh, brought the point out a little above the tuberosity of the ischium, cutting a short anterior flap. Dr. Brown then rotated and depressed the limb, with the view of facilitating disarticulation; but owing to the shattered state of the femur, this movement did not produce the desired effect. Fortunately, however, this caused no great delay, for my knife had opened the joint in passing across the limb; and by grasping the upper broken fragment of the bone, so as to project the head, I completed the disarticulation, and cut as large a posterior flap as I could obtain from the uninjured parts. Some vessels on the posterior flap were first secured, and then the great vessels in the anterior flap, the vein being included in a ligature. I then removed some contused and doubtful-looking portions of muscle. After all bleeding had been arrested, the flaps were brought together with sutures; and, considering the nature of the parts from which the flaps were formed, they fitted tolerably well. The stump was then dressed, and the patient placed in bed, hot bottles applied, and some stimulus given, as he was very weak. He lost very little blood during the operation, as I ascertained by carefully collecting the blood from the stone floor, when it was found to amount to less than half a small teacupful; and altogether, with what was in the sponges, to about five ounces at most. After waiting till the little patient had completely rallied from the chloroform, and had got an opiate administered, I left him in the charge of Dr. Smith, who remained with him all night, and to whom I am indebted for the following report of the progress of the case:—

"*Examination of Limb after Removal.*—On examination of the limb after removal, the femur, from the large trochanter downwards for about two inches, was found to be broken into numerous fragments, the ragged edges of which were imbedded in the surrounding soft parts. The muscles and other structures were much bruised and torn, but there was no direct injury to the large vessels or nerves.

"*4th September.* During the night, patient was very restless and delirious; pulse 134, weak. A little brandy and water was administered at intervals, but was vomited. No reactionary hemorrhage of any consequence. *Vespere.* Still restless, with delirium; pulse 130. To have opiate with a few drops tinct. mur. ferr.

"*5th.* Restless night; pulse 130, very weak and thready; sunken aspect of countenance. Beef-tea, brandy, and milk given in small quantities frequently.

"*6th.* Rather better; slept a little; less delirium; pulse 108, stronger; wound has healthy appearance, except at the bruised part of the flap, which looks sloughy.

"*7th.* Pulse 108; sloughing action extending slightly on posterior flap; fetid sero-purulent discharge. Chloride of soda lotion; opiate.

"*8th.* Pulse 90; no delirium; line of demarcation formed, showing slough, rather exceeding a square inch in extent; purulent discharge copious, and less fetid.

"*9th.* All the stitches removed, and the flaps brought together as well as possible by strips of plaster. Pulse 100.

"*12th.* Sloughs separated; an attack of diarrhœa; slight delirium. Opiate.

"*14th.* Pulse 108; diarrhœa less; stump looking healthy. Diet for the most part milk, beef-tea, wine, with a little brandy.

"*16th.* Doing well.

"*20th.* Pulse has risen to 120; had a restless night with delirium; raw surface of stump covered with patches of whitish semi-translucent membrane of pretty tough consistence; copious purulent discharge. Stimulants given in increased quantity.[1]

"*21st.* Pulse 120; occasional delirium; wound has same appearance.

"*23d.* Pulse 118; wound has less of its diphtheritic-looking covering.

"*27th.* Stump looks healthy, and is cicatrizing round the edges. Dressed with sulphate of zinc lotion. Pulse still high, 116; sleeps well; appetite indifferent.

"*1st October.* Pulse 110; doing well.

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[1] "Dr. Brown informs me that diphtheria was prevailing in the district at the time."

"*4th.* Pulse 102.

"From this time recovery was slow but uninterrupted. The patient gained strength gradually, with the aid of tonics, wine, etc. The femoral ligature did not fall off till 4th November, two months after the operation, having evidently been retained for some time after its separation from the vessel by the granulations surrounding it. By the middle of December the stump was healed, with the exception of a mere spot. Two or three weeks later this also had closed, and the patient was able to move about with the aid of crutches."

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30. *Securing Vessels by Wire Ligatures and cutting both Ends of the Wire short and leaving them in the Wound.*—Five cases are recorded (*Lancet*, July 23, 1864), three of amputation of the breast for carcinoma, and two of amputation of a limb, in which Mr. Barnard Holt secured the vessels by wire ligatures, and cut both ends of the wire short.

In some clinical remarks Mr. Holt observed that, although in no instance were the incisions followed by immediate union through their entire extent, yet a much greater portion had healed by the first intention, and much less suppuration followed, than where the vessels were secured in the ordinary manner; and it appeared very probable that in cases of amputation of the leg and arm, the non-irritation of the wound had prevented any unfavourable result, the hospital being at the time of the performance of the operations in an especially unhealthy state from the presence of hospital phagedena, which had attacked many of the cases of ulcer and wounds. There was nothing new in the principle of cutting short the ends of the ligature and allowing them to be retained in the stump; for it would seem to have been simultaneously adopted, about 1798, by an American naval surgeon and Dr. Maxwell, of Dumfries. Hennen and other military surgeons extensively followed the practice, and it was the last-named surgeon who first suggested the use of hair ligatures. So far as the present cases went, they tended to show that as great security was afforded against secondary hemorrhage by the use of the wire as of the thread; and certainly there was less risk of abundant suppuration and of the occurrence of pyæmia than where the hempen ligature was employed. The surfaces of the wound were likewise kept in undisturbed approximation; the patient was saved the pain of removing the ligatures—a pain occasionally very severe; the suppuration was infinitely less; and in favourable cases there were great probabilities that immediate union might be secured through the entirety of the wound, the retention of the wire ligature not in the least degree militating against such a result, or giving the slightest inconvenience either immediate or remote. As a further proof of this, Mr. Holt referred to the continued good result which followed the subcutaneous tying of the veins in two cases of varicocele already reported in this journal. Mr. Holt also alluded to the probable advantage that might result in cases of aneurism where pressure had failed, but where it was desirable that a modified current of blood should be permitted to pass through the artery, by partially compressing the main artery by tying the wire loosely and cutting both ends short: the experiment seemed to be worth a trial.

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31. *Treatment of Acute Orchitis by Puncturing the Testicle.*—Henry Smith Esq., Assistant-Surgeon King's College Hospital, in a case of very acute gonorrhœal orchitis, supposing suppuration had taken place, with a view of evacuating the pus, made a free incision; but to his dismay no matter escaped. Speedy relief, however, followed, and this case suggested some serious reflections. The quantity of serum and blood abstracted was too small for the cessation of pain and swelling could hardly be due to this cause, and he was led to ascribe the relief to the removal of tension by the division of the fibrous envelope of the testis.

"Influenced," he says, "by this reasoning, and by the result of this case, I determined to try the effect of puncturing the testis in similar cases; and in the next case of acute orchitis which presented, I made a deep and free incision with a sharp narrow bistoury, emitting about half a teaspoonful of serum and several drachms of blood; and no other treatment beyond a little of the common aperient mixture was supplied. The result here was as successful as in the

former; and as cases presented themselves, I adopted the same plan of treatment, reserving it, however, especially to those instances where the swelling and pain were very great. After the trial in a few cases, it was found that the success attending this practice was such as to lead me to adopt it as the usual treatment of acute orchitis; and during the last twelve months I have probably treated in this way upwards of twenty cases, with results as have astonished both myself and those numerous pupils who have witnessed the practice.

"In nearly every case so treated—and I have purposely selected the most acute—the patient has experienced the most striking relief before he has left the out-patients' room; and on the next visit, forty-eight hours afterwards, the contrast presented is so remarkable that the superiority of this plan over the old-fashioned modes of treatment is at once impressed forcibly upon the minds of those even who would naturally be prejudiced against so apparently heroic a treatment. The speedy subsidence of all the acute symptoms is due entirely to the puncture of the swollen and inflamed organ, for I have taken especial care not to prescribe anything else except a little of the common white mixture, or perhaps the use of the ordinary lead lotion, and this chiefly to please the patient.

"The only inconvenient result," he states, "I have witnessed from this treatment, was the following: An incision was made into the testicle of a middle-aged man, with the usual relief, but in a few days the scrotum began to swell, great pain was experienced, and the man was taken into the hospital. The objectors to the mode of treatment suggested all sorts of disasters, in the shape of suppuration of the testicle, &c., but on careful examination it was ascertained that the swelling consisted of a large and rapid effusion of fluid into the tunica vaginalis, which was at once evacuated, with speedy relief to the patient. In another instance I made the incision much deeper than was necessary, carrying the point of the knife nearly to the back of the organ. As much as ten ounces of blood were lost, but the testis was violently inflamed and swollen, and the only effect of the accident was to make the patient somewhat faint, but at the same time to give more speedy and effectual relief than usual.

"This circumstance may lead one to the belief that the relief is due solely to the escape of blood from the puncture; but this view is inconsistent with the fact that great relief is given when only a few drachms of blood, mixed with serum, are discharged. Doubtless the direct withdrawal of blood from the highly-inflamed testicle is of service, but my own view of the matter is, that the relief is in a great measure due to the withdrawal of the tension from the body of the testis by free division of the tunica albuginea."

In a postscript Mr. S. adds: "Since the above was written I have seen one of my old pupils who has been spending the last six months in the Paris hospitals, and he informs me that the ordinary practice at the Hôpital de Midi in cases of acute orchitis is to make a puncture in several places with a lancet; the instrument is not carried into the body of the testicle, but simply through the tunica albuginea. He describes the plan of treatment as most successful."—*Lancet*, Aug. 6, 1864.

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## OPHTHALMOLOGY.

32. *Mr. Critchett on Sympathetic Ophthalmia of the One Eye from Traumatic Inflammation of the Other.*—This affection is observed principally in the young; its ordinary cause is an injury of the iris and ciliary region; very often, there is some foreign body in the eye. After some time—after a few days or many months, on an average after about six weeks—the symptoms of sympathetic disease begin in the uninjured eye. The treatment consists of excision of the injured globe on the one hand—on the other of perfect rest in a darkened chamber, &c., and occasionally of iridectomy, or when the lens has become opaque, of its extraction. According to the author's experience enucleation is of little or no use, when the sympathetic ophthalmia has one commenced. He

has also found iridectomy unsatisfactory in such cases as a means of arresting the disease; he is therefore now inclined to temporize till the disease has terminated, and then to perform extraction.

Case 1. A girl, 8 years old, had her left eye injured by a pair of scissors; the cornea, sclerotic, iris, and lens were involved. The iris was united to the corneal wound; there was some redness and photophobia; she could, however, yet perceive larger objects. The other eye already presented symptoms of sympathetic ophthalmia. The parents refused an operation. Four months later the injured eye was soft, atrophied, and insensitive; all perception of light was lost. The disease in the other eye had advanced, and the vision was much impaired. Under these circumstances it was determined to perform iridectomy. After much trouble a little piece of iris was excised, a good pupil being formed. In the course of a few weeks there was marked improvement; but three months later there was a fresh attack of iritis, and the pupil closed again.

Case 2. The left eye of a perfectly healthy girl, 11 years old, was injured by a percussion-cap. In six weeks the other eye presented symptoms of smypathetic ophthalmia; the left eye was, therefore, immediately removed. On its examination, a fragment of the cap was found in the ciliary region. An attempt at iridectomy in the right eye failed; during two years six operations have been performed on this eye, with the object of removing the lens and restoring the pupil. The girl, who is now 16 years old, can sew and read No. 8 Jäger. Mr. Critchett has only had one other case which ended favourably; it was the following:—

Case 3. Four years ago a man of 22 was brought to him. The left eye was soft and atrophied. In the right eye the pupil was closed; the anterior chamber somewhat contracted, the lens opaque and partially absorbed, the tension somewhat less than the normal. From the history it appears that when eight years old he had been injured by falling on a spade; three or four months later the other eye was attacked, and had gradually progressed to its present condition. For fourteen years he had only been able to indistinctly recognize the outlines of objects. In this case Mr. Critchett extracted the lens by the upper incision; the wound healed well, but the pupil closed again. Two months later he obtained a clear space by iridectomy; since that time the patient has had tolerable vision; indeed, there is a little tendency to improvement. The author also relates two cases of operation followed by sympathetic disease. After an extraction on the left eye of a man between 70 and 80, there was a prolapsus iridis and a chronic inflammation. Three months later sympathetic inflammation caused rapid loss of sight of the right eye: good vision was, however, restored by means of the operation for artificial pupil after the other eye had been removed. The second case was that of a lady of delicate constitution, who had in one eye a perfect, in the other a commencing cataract. Extraction of the mature cataract was followed by a slight prolapsus of the iris, which was touched with nitrate of silver; severe pain and long-continued irritation followed. Three weeks later sympathetic ophthalmia attacked the other eye and finally induced perfect blindness.

In short, the principal points to be noticed are—

1. That the injuries which give rise to sympathetic ophthalmia generally implicate the ciliary region.

2. That the effects of this inflammation differ in important points from those caused by other forms of iritis.

3. That neither local nor constitutional treatment, nor yet surgical operations, exercise any beneficial influence over the eye.

4. That operative treatment should be delayed till all inflammation is over, but that even then the prognosis is very dubious.

5. That, having respect to the irrepressible inflammation and the danger of total blindness, it would perhaps be better in injuries of the ciliary region, which cause long-continued irritation, to remove the injured eye before the other has been attacked with inflammation.

Mr. Critchett's paper was read at the meeting of ophthalmic surgeons at Heidelberg. In the discussion that followed, von Gräfe remarked that the author had perfectly described one form of sympathetic ophthalmia, that of the

dreaded iridocyclitis, but that another and less dangerous form, that of iritis serosa, was also observed. All the symptoms described by Mr. Critchett as peculiar, depend upon the early implication of the ciliary body; the early appearance of large vessels in the iris is also an important symptom. Von Gräfe considers as conditions for the occurrence of sympathetic ophthalmia—1. The presence of foreign bodies, which act as constant sources of irritation. 2. The continuance of iridocyclitis in the injured eye often characterized by abnormal sensibility of the ciliary region to the touch. 3. Recurrent intra-ocular hemorrhages with rapid changes of tension. 4. Calcareous deposits. In respect to the treatment, von Gräfe considers that when sympathetic ophthalmia has once broken out, enucleation should always be recommended. Foreign bodies of any size should be boldly extracted from the interior of the eye before any sympathetic disease has commenced. In other cases, for example where iridocyclitus persists, or where blood is effused in the injured eye, enulceation may be replaced by the seton passed through the vitreous, for a sympathetic affection of the other eye has never been observed during acute purulent processes from panophthalmitis.

Donders had seen cases in which the second eye became without any visible organic disease, affected with the severest photophobia and entirely useless; immediately after enucleation (a foreign body was found in the globe) the vision of the other eye became quite normal. Von Gräfe had also observed such cases of nervous irritation; he considers that they should be carefully distinguished from those of sympathetic ophthalmia, because, even when long continued, there is no organic disease, and the prognosis is never unfavourable.

In answer to a question by Warlomont, von Gräfe mentioned that he was convinced that sympathetic ophthalmia sometimes resulted from chronic choroiditis: thus, after enucleation of an eye which had become blind from chronic choroiditis, the acuteness of vision of the other eye which had become secondarily affected with choroiditis and opacities of the vitreous, immediately increased from ½ to almost 1, although three months' previous treatment had not had the slightest effect.

Horner and Pagenstecher adduced the formation of excavation of the disk as a form of sympathetic disease, and Liebreich described a peculiar form of quasi-sympathetic amblyopia, characterized by photophobia, central acuteness of vision, and rhythmically periodical obscurations of the visual field (continuing from a half to one minute). The latter state is, according to him, an exaltation of a physiological process, for such periodical variations are observed by a healthy person when one eye is firmly closed.—*The Ophthalmic Review*, July, 1864, from *Klin. Monatsbl. f. Augenh.*, i. 440.

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33. *Subcutaneous Injections in Ophthalmic Surgery.*—Prof. VON GRAEFE lately delivered a series of clinical lectures on the employment of subcutaneous injections in ophthalmic surgery, of which we propose to give a brief abstract. His experiments have been only made with the acetate of morphia and the sulphate of atropia. The most favourable situation for making the injections is the middle of the temporal region, and it is this which the Professor chooses under all circumstances, unless there be some special indication, such as neuralgia or spasmodic phenomena, which makes it probable that some other point may be preferable. The integument should be well raised from the subjacent parts, the canula should be pushed into the cellular tissue, and the skin should be closely applied around the canula, so as to prevent the return of the liquid injected. The quantity of acetate of morphia employed in Graefe's experiments varied from the tenth of a grain to half a grain, a fifth or sixth of a grain being the usual quantity. The solution contained four grains of the acetate in a drachm of distilled water; it should be neuter, or very feebly acid. The physiological action is the same as when morphia is taken into the stomach, but in general it is better marked, and consequently the amount injected ought to be smaller by about a third than the quantity which would be administered internally. The action on the iris is interesting. Often at the end of a minute, sometimes not for half an hour, the special contraction of the iris (*opium-myosis*) manifests itself. This contraction is best observed by comparing the dimension of the

pupils with a moderate light. The degree and the duration of the myosis vary remarkably; in a large number of cases it remains well marked for several hours, and disappears slowly. Sometimes, in very irritable persons, spasm of the muscle of accommodation of the iris takes place; when this phenomenon occurs, it is at an advanced period, at the end of the stage of irritation. The most important therapeutical indications of subcutaneous injections of morphia are, according to Graefe, the following: 1. In the case of traumatic injuries which have involved the eyeball, soon after their occurrence, and when there is severe pain; for instance, after the penetration of foreign bodies, superficial burns or wounds, the pain is more speedily allayed by the subcutaneous injection of morphia than by the instillation of solution of atropine between the eyelids. Professor Graefe is opposed to the application of leeches after the extraction of foreign bodies, after contusions, and after penetrating wounds; he looks upon them as more likely to produce than to prevent inflammation and suppuration. 2. After operations on the eye, when they are followed within a short time by intense pain. 3. In the neuralgia of the ciliary nerves which accompanies iritis, glaucomatous choroiditis, and several forms of inflammation of the cornea. 4. As an antidote for poisoning by atropine, an action which was pointed out by Mr. Benjamin Bell in 1857. 5. In neuralgic affections of the terminal branches of the fifth pair in the frontal region, not dependent on an affection of the eye. 6. In different forms of reflex spasms, such as spasm of the eyelids in traumatic keratitis, and spasmodic contraction in the course of the facial nerve.

In the case of injections of atropia, the greatest prudence is necessary. In some persons the sixtieth of a grain is sufficient to give rise to general symptoms. In general, the first dose injected should not exceed that quantity; it may afterwards be gradually increased to the twentieth of a grain. According to Professor Graefe, the occasions for the employment of atropia in injections are very limited; and to produce the mydriatic effect, the form of instillation is preferable. Even when a full quantity is injected, the dilation of the pupils is moderate, and the power of accommodation of the iris is not superseded, whilst the desired effect is obtained by much smaller doses introduced between the eyelids. In neuralgia, injections of atropia do no good, in spasmodic affections their effect is very doubtful; so that their employment seems to be limited to cases in which the conjunctiva would not tolerate the presence of the atropia. —*Edinburgh Medical Journal*, July, 1864, from *Bull. Gén. de Thérap.*

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## MIDWIFERY.

34. *Spondylolisthesis; with an Account of a Case of Pelvic Contraction, in which Premature Labour was induced by the Author's Method.*—Dr. Robert Barnes read before the Obstetrical Society of London (April 6, 1864) a memoir embracing a history of the literature of this affection and a summary of the cases hitherto recorded. It was first described, in 1853, by Kilian, who defined it as a slipping downwards and forwards of the last lumbar vertebra upon the sacrum, so that one or more of the lumbar vertebræ fall into the cavity of the pelvis, encroaching upon the space required in labour. In several cases the Cæsarean section had been necessary in order to deliver. The author added a case in which he believed this form of distortion was the cause of difficult labour. A woman, previously healthy, had been injured in the back. Considerable contraction of the pelvic brim followed. There was a marked depression in the lumbar region, and a projection internally above the promontory of the sacrum. Dr. Barnes brought on labour by this method at about the eighth month. The child was extracted by turning with some difficulty, still-born. The entire labour occupied less than five hours. The mother recovered. The remainder of the memoir was devoted to the discussion of the causes of the deformity, concerning which very conflicting views were entertained in Germany.

Mr. W. Adams observed that he had listened to the paper with great interest, as the vertebral deformity or displacement described was but little known, and

required further investigation. It seemed to him that the condition described as spondylolisthesis might depend upon several causes. Rickets might give rise to it; but this would be at once apparent by the general evidences of rickets in the development of the skeleton, distortion of the legs, etc. Caries of the first sacral bone might give rise to it; and some years after destructive disease had ceased, and anchylosis produced, the prominence forward of the last lumbar vertebra might encroach considerably on the pelvic cavity. Mr. Adams had seen a few examples of this, and had one now under his care at the Orthopædic Hospital. In this case the girl presented extreme lordosis in the lumbar region, with corresponding projection of the stomach, and a sharp posterior angular prominence corresponding to the first and second sacral bones. In all probability this girl, now twenty-one years of age, could never have a living child, in consequence of the projection of the last lumbar vertebra into the pelvic cavity. Congenital dislocation of both hip-joints produces extreme lordosis in the lumbar region, and, therefore, would probably give rise to the condition described as spondylolisthesis; and Mr. Adams had also seen it produced to some extent by a sharp rotation movement, and lateral distortion affecting the lower lumbar vertebræ, as in a case described by him in the *Medico-Chirurgical Transactions*, vol. xxxvii. It was evident that a variety of causes might produce the vertebral displacement mentioned by Dr. Barnes, whose analysis of the cases recorded in the paper would form the basis of further observations on this subject.

Mr. Brodhurst observed that this was a subject which had not received much attention in this country. He considered that the affection in question was not a true dislocation, as it was described by the author of the paper, and that it differed materially from ordinary lordosis, and from those forms of lordosis which are produced by congenital dislocations of the heads of the femurs by some very rare forms of caries of the bodies of the vertebræ, etc.; but it was induced, he said, by softening of the bodies of the vertebræ, and especially by softening and yielding of the ligaments which unite the lumbar vertebræ and the sacrum. Thus was occasioned some displacement of the bodies of the lumbar vertebræ downwards. The positions of the spinous processes showed that caries was not the cause of this affection, as had been suggested, and a section of the bodies of the vertebræ showed this fact still more clearly. He contended that this condition was due to rachitic inflammation and softening of the osseous and ligamentous structures.

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35. *Movable Kidneys giving rise to Symptoms of Pregnancy.*—Mr. E. D. DAY records (*Med. Times and Gaz.*, July 9, 1864) the following example of this:—

Mrs. W., æt. 37, applied at King's College Hospital on June 3, 1864, under the following circumstances: She was married, and had had one child five years before. Since that time she had menstruated regularly till September last, when she was much frightened by the ceiling of her room falling in. After that she missed two periods and supposed herself pregnant, and was therefore surprised at finding that at the third period the catamenia returned, and have continued regular since. She still thought herself in the family way, as, to use her own words, "she had felt the movements of the child;" but the nine months having passed without any change in her condition, she was anxious to have my opinion as to her state.

On making an abdominal examination, I found that the abdomen was tympanitic, and that there was no uterine tumour whatever, but in the right iliac fossa I felt a tumour, which slipped readily away from my hand, and upon closer examination was determined to be the right kidney. The hilum was readily felt, and the space over which the kidney could be moved was about three or four inches. On examining the left side, that kidney was also found movable, but it was not so low down as the right. It was situated just below the level of the ribs, and could be moved over an area of two or three inches.

The movements which she had considered fœtal were thus clearly to be attributed to these movable kidneys.

In order to make the diagnosis more sure, I sent her into the hospital under the care of Dr. G. Johnson, who agreed in the opinion I had expressed.

36. *Placenta Prævia.*—Dr. Robt. Greenhalgh read a paper on this subject before the Obstetrical Society of London, July 6, 1864. The author first alluded to the large mortality both to mothers and children (one in four and a quarter of the latter, which he attributed mainly to the severe and repeated losses of blood, to the delay in affecting the delivery, and the method of turning usually had recourse to in these cases. He then gave the details of twenty-four cases which had occurred in his own private and consulting practice between the years 1842 and 1864. He placed before the society several statistical tables, chiefly taken from Dr. Read's work, to show, in addition to other facts, that the expulsion of the child generally takes place before the full period of utero-gestation—premature labour being the rule and not the exception; that nature, unaided, frequently terminates the delivery with safety both to mother and child; that complete and partial artificial separation of the placenta before the birth of the child has failed in numerous cases to arrest the hemorrhage; and that these methods and turning had proved most unsatisfactory in their results. Having dwelt at some length upon these several points, he strongly advocated a close observance of the way in which nature terminates these cases with safety to mother and child. Having specified the result of his observations on that head, he confidently recommended the following plan of treatment, which had proved, as far as the limited number of cases could prove, in his hands and in those of others, far more successful, both to mothers and children, than any other method hitherto devised. It was as follows: 1st. That in any case of hemorrhage, whether profuse or otherwise, occurring after the commencement of the seventh month of utero-gestation, ascertained to be due to placenta prævia, artificial premature labour should be induced at once, or as soon as the condition of the patient will admit of it. 2dly. That in order to effect that end without loss of blood, an air-ball, covered with spongio-piline, be passed, collapsed, into the vagina, and then inflated so as effectually to fill that canal, while a bandage is placed firmly round the abdomen; at the same time the ergot of rye and borax are to be administered in repeated doses. He further recommended as aids, stimulating enemata, with tincture of nux vomica, galvanism, and friction over the abdomen. The author concluded by condemning, in the strongest terms, the use of general hygienic means and hæmostatic remedies over days and weeks in these cases, which course, he was firmly convinced, was the cause of many valuable lives being lost.

Dr. Barnes observed, that agreeing generally in the principle that labour should be brought on in cases of severe hemorrhage from placenta prævia, a principle, he believed, commonly acted upon in London—he could not assent to much of Dr. Greenhalgh's reasoning, or concur in approving his plug. His statistical reasoning was open to criticism. He assumed two postulates: first, that the mortality in placenta prævia was 1 in 4¼; secondly, that the mortality from inducing premature labour was 1 in 53; and he drew the extraordinary conclusion that by always inducing labour we might substitute the low mortality of premature labour induced under selected circumstances for the assumed heavy mortality of 1 in 4¼. Now both the postulates were false, and the conclusion was manifestly illogical. The mortality of 1 in 4¼ drawn from Dr. Read's tables was a most unfair representation of the results of modern obstetricity. He (Dr. Barnes) had analyzed his own cases. Since the publication of his Lettsomian Lectures 59 cases had come under his own observation; and he drew 24 from other sources, most of these last being treated upon his (Dr. Barnes's) principles. The deaths were six only, or 1 in 14. And if he were to follow Dr. Greenhalgh in striking out the fatal cases on the ground that treatment was too late, he might show statistical results very far superior. He should have not 10 successful cases, but 77. Two of his cases died of pyæmia, having been treated by forced delivery—that is, in direct opposition to his principles; 2 were moribund when seen, and two were hopelessly anæmic. He had taken all cases as they occurred in his books without selection or arrangement, yet 26 cases fell as an uninterrupted series of recoveries, which he might fairly place against Dr. Greenhalgh's selected 10. Then as to the mortality in premature labour. Premature labour was induced under selected circumstances to avoid dangerous complications. Such cases were not to be compared with labours forced upon us by the flood-

ing of placenta prævia. This Dr. Greenhalgh disregarded. But surely placenta prævia went for something. Then the children. Dr. Greenhalgh had been fortunate. In his small series of 10 cases he had 8 living children. He (Dr. Barnes) ventured to say that a larger experience would modify this result. Many dangers surrounded the child in placenta prævia: cross-births, funis presentations, immaturity and asphyxia in utero; some were born putrid. His (Dr. Barnes's) plan was eminently adapted to secure the child. But his mortality was 63. The very method of Dr. Greenhalgh of bringing on premature labour must of itself often destroy the child, for the floodings would come on at six and seven months. And in some cases flooding did not occur until the end of gestation. These were often the most dangerous. Yet here Dr. Greenhalgh's plan was not available. And what was Dr. Greenhalgh's plan? The use of a *vaginal* plug, not differing essentially from the colpeurynter of Braun. It acted like all other vaginal plugs by exciting uterine contraction, if the uterus was excitable. But, unfortunately, in the worst cases the uterus was paralyzed. In these, where art was most necessary, the plug was useless. He was surprised to hear Dr. Greenhalgh undervalue rupturing the membranes. This simple method was in many cases quite sufficient, and no method was long serviceable without it. If, in combination with rupturing the membranes, the placenta was detached from the cervical zone, so freeing the cervix, the cervix then artificially expanded by his *cervical* dilators, and the bimanual method of turning resorted to, he was confident from large experience, that a greater measure of success would be obtained than by any other especial method. He took that opportunity of stating that the first published case of the use of the intra-unterine dilator in placenta prævia which attracted his attention belonged to Mr. Jardine Murray, of Brighton.—*Lancet*, Aug. 6. 1864.

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37. *On the Application of Extreme Cold as an Anodyne in the Pain attendant on Parturition.*—Mr. J. MORTIMER LEWIS, in a paper read before the Obstetrical Society of London (May 4, 1864), stated that "an examination of the phenomena of labour, more especially in relation to the nature, duration, and intensity of the pain accompanying it, has led the author to the following conclusions: 1. The actual pain (as distinguished from the sensation of forcing) experienced by the parturient woman bears no definite proportion to the force and efficiency of what (for want of a better name) we term 'the pains' of her labour. 2. The sensation of pain is not invariably synchronous with the occurrence of uterine contraction, the effects of the latter being perceptible to the accoucheur not unfrequently, during examination, before his patient experiences the former.

"From these circumstances, taken in connection with others well known to careful observers, it may be inferred that the pain attendant on labour is more directly related to the effects of uterine contraction (perhaps mechanical force operating on nervous tissue) than to the specific muscular act itself.

"The reference of the pain to some region more or less remote from the contracting uterus or the dilating external passages (in which the seat of pain might have been supposed to be located) appears to support the last inference, whilst it clearly points to the conclusion that the pain attendant on labour is neuralgic in its character.

"Acting on this theory, the author has tried the effect of extreme cold as a topical anodyne, and the result has been so constant that, after repeated experiment, he feels confidence in bringing this new method of seeking to alleviate the pains of labour before the society, and suggesting its adoption by the profession. The method is applicable in all cases, independent of the condition of the patient, cold being already in use as a powerful means of exciting the uterus to contraction in cases of extreme exhaustion. It is perfectly free from the dangers so inseparable from the most cautious use of anæsthetics. It is perfectly manageable, and may be safely confided to a nurse; and its *rationale* is in strict conformity with the well-known principles of physiology. It is not intended to remove, but to alleviate, the pain attendant on parturition. It will be found that the power of the uterine efforts is generally increased, without any corresponding increase in the attendant suffering, the patient being not unfrequently

under the impression that the pain has ceased when the presentation continues to evidence the continuance of the expulsive force. This has been very remarkable in some of the cases, the pains appearing to be shortened, when examination has proved them to be prolonged. The actual pain is sensibly diminished, the patients expressing themselves variously, but to the general effect that they are relieved of half their suffering.

"The method of the application is of the greatest importance. The cold must be extreme, or it is of little if any service, and it must be persistent.

"An apparatus was exhibited consisting of a flat tin box, which is filled with a freezing mixture and applied to the seat of the pain.

"Dr. Oldham believed some difficulty would be found in determining what was the seat of pain. Madame Boivin referred the pain during her own labours to the neck of the uterus."

38. *A New Mode of Treatment of Vesico-Vaginal Fistula.*—Dr. Alfred Meadows, in a paper read before the Obstetrical Society of London (May 4, 1864), contended that the usual practice of keeping the patient in bed for two or three weeks after the operation for the cure of vesico-vaginal fistula is unnecessary, and that, on the contrary, she may be allowed with perfect safety to go about as usual immediately after the operation. The author showed that the reason given for the former practice, viz., that the parts should be kept quiet, is as fully attended to in the plan suggested as in that usually followed, because the movements of the body do not interfere with the quietude of that particular portion of the floor of the bladder where the fistula existed, there being no muscles in this region which can by their attachments prejudicially affect the part in question. With regard to the second consideration—that the urine should be kept from the surface of the fistula, either by the constant employment of the catheter or by its frequent use—the author exposed the fallacy of this argument by briefly reviewing the circumstances which exist after every operation of this kind. At first the bladder is quite empty, but, as urine gradually flows into it, the organ becomes slowly distended; and the very fact of this distension taking place by the uniform pressure of the urine, proves that contact of that fluid with every part of the bladder-wall cannot be avoided: no position of the patient can prevent it, and consequently the recumbent posture is not needed on this account, nor is the use of the catheter of any service. Two cases were detailed in which the plan here suggested by the author had been carried out with perfect success. In one, where chloroform was not administered, the patient went about immediately after the operation, and followed her usual avocations. In the other case, the patient had chloroform, and on this account chiefly she kept in bed that day; but the next day she was allowed to go out, and her cure was equally complete. In both cases the opening was large enough to admit the finger easily; and in one of them it was situated far in the vagina. The author recommended the use of many sutures, merely twisting them, and without either clamp or shot; he also advised that they should be allowed to remain some time to secure firm union, their presence occasioning no inconvenience. One of the cases cited was further remarkable, inasmuch as by the process of sloughing which had previously taken place no trace of the uterus could anywhere be discovered, and the patient has continued for some time past to menstruate through the bladder.

## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

39. *Chronic Poisoning by Tobacco.* By Dr. Le Briert.—On the 7th of February, 1864, I was sent for to see a woman, the wife of a miller, forty-six years of age. She had originally been of sound constitution, had been married twice, and had had five children. She had suffered much from anxiety for a long time, but four years ago she had additional grief from the loss of a daughter eleven

years old, to whom she was devotedly attached. From that time she had no peace of mind. She sought every means of distraction, drank to excess, and, from a singular depravation of taste, took to eating tobacco of every kind, to the amount of about two francs' worth a week. When I arrived the patient was almost speechless; her voice was hoarse, and she could only murmur some inarticulate sounds. The respiration was difficult, sighing; the pulse was weak and slow. The heart scarcely beat. The pupil was dilated and insensible to light; the eye had a haggard appearance, and blindness was almost complete. Deafness was not complete, but hearing was very dull. The face was emaciated, pale, and stupid-looking; the tongue was tremulous, red, and dry. Swallowing was very painful, owing to spasms of the throat. The belly was retracted. The feces, resembling the excrements of sheep, had for long only been passed after the use of enemata and purgatives; at first, on the contrary, purging had been present, and she had often vomited. Soon, however, her appetite had failed, the gastro-intestinal walls had been, so to speak, affected with stupor, like all the rest of the body, and the period of prostration arrived. The urine was passed involuntarily. There was weakness, cold sweat, sleeplessness. Under these circumstances I could do nothing; I merely ordered soup, coffee, and acid drinks. When I saw the patient two days afterwards, her voice was suppressed like that of a cholera patient, deglutition was impossible; the chest scarcely moved; the respiratory murmur and the movements of the heart were almost inaudible. All the organs were in a manner stunned by the influence of the tobacco. Death occurred a few hours afterwards.—*Edinburgh Medical Journal*, Aug. 1864, from *Gazette des Hôpitaux.*

40. *Poisoning by Tobacco-Leaves.* By Dr. NAMIAS.—Some time ago, M. Decaisne laid before the Academy of Sciences a memoir on "The Intermittence of the Heart and Pulse occasioned by excessive Tobacco-Smoking," in which he arrived at the conclusion that the abuse can produce in certain persons a condition which may be called narcotism of the heart, and which manifests itself by intermittence in the beating of the heart and in the pulsations of the radial artery. The importance of bringing forward facts in connection with this theory induces me to record the following case. A smuggler some months ago covered the whole of his naked body with tobacco-leaves, with a view to defrauding the revenue of the amount of the duty. The tobacco, moistened by perspiration, produced through the skin a real poisoning, which, however, was cured by means of alcoholic stimulants and laudanum. The extreme feebleness of the pulse, its smallness, the cold sweats, the fainting occasioned by the tobacco applied to the whole surface of the body, present numerous analogies with the condition called by Decaisne narcotism of the heart, and which he noticed to disappear entirely or to diminish when the use of tobacco was suspended or diminished. So far as I know, no other case of poisoning by tobacco applied to the skin has been recorded. The treatment successfully employed does not, however, lead to any general conclusions. In ordinary poisoning, the first thing is to eliminate or neutralize the poison. We must then direct attention to the condition produced by it, and this condition depends not only on the nature and quantity of the poison, but on the previous condition of the individual. We cannot thus treat poisoning by the same poison in different individuals in the same manner, because the same morbific causes do not always produce the same consecutive malady. Electric currents, which in other conditions excite hyperæmia and inflammation, only exhaust and use up directly the vital forces when they act with too great violence. I have made a similar observation as to the effect of alcoholic stimulants, which must be combated according to the different symptoms presented by the patients, that is to say, according to the different diseases which are the consequence of their abuse.—*Edinburgh Medical Journal*, Aug. 1864, from *Gazette des Hôpitaux.*

# AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*A Review of some Remarks of Professor Longmore, Deputy-Inspector-General British Army, on the Treatment of Gunshot Wounds of the Chest by Hermetically Sealing.* By B. HOWARD, Assistant-Surgeon U. S. A.—In the *American Medical Times*, vol. vii. No. 14, I published a short article with the intention of giving briefly a general idea of the plan of treating gunshot wounds of the chest by hermetically sealing. In that article I preferred using general terms, because I deemed my experience insufficient to authorize my speaking very definitely upon the subject.

At the same time that I wished to avoid hastily giving any positive opinions which I might possibly have to retract, I felt compelled to submit the general plan to the profession, in consequence of its apparent superiority over every other treatment, judging from the remarkable and ultimate recovery of cases which up to that time I had been able to treat by that method until their removal to General Hospital. I was, indeed, not so anxious to have the plan generally adopted, as to induce others to make similar investigations, thinking that the issue in the cases I had so treated might have been rather a happy coincidence than a consequent result.

I observe that exceptions to some parts of this article have been taken by Professor Longmore, Deputy Inspector-General of the British Army, published in the *London Lancet*, Vol. I, No. 1, 1864.[1] These remarks are characterized by distinguished courtesy, and it is in the same spirit I wish to review them.

Prof. Longmore first complains of the absence of limitations in the application of the treatment in the preliminary article referred to. He assumes that, as they were not technically stated, had I expressed my opinions fully enough, I should have recommended its universal application; an assumption inconsistent with the nature of the subject, and contrary to the universal axiom in our profession.

In the so-called science of medicine, even in our most settled and approved plans of treatment of any disease, one cannot attempt an enumeration, much less a description of every modifying circumstance which may occur in every case, and give in detail the corresponding modifications of treatment thereby indicated, without being quite voluminous.

Neither will they, being given, be used to any great advantage, for, though the memory of the Surgeon be ever so accurate, nothing can supply the place of a correct judgment, which, as it matures, proceeds upon the fewest and most general rules.

It is this unqualified application of the treatment described, which seems to be the first upon which the controversy chiefly turns, and which Profes-

[1] Remarks on the recently "Proposed American Plan of Treating Gunshot Wounds of the Chest by Hermetically Sealing," by Deputy Inspector General S. Longmore.—*London Lancet*, January 2, 1864.

sor Longmore says, "makes me think it important to notice it; for, if put into practice, *as described*, I feel certain it must lead not only to much disappointment, but occasionally do considerable harm." This is a statement with which all must coincide, applied to any commonly recognized treatment of every disease, and one which I would have fully indorsed at any time respecting the treatment under consideration.

Although Prof. Longmore admits that my meaning "is obvious," he takes exception to the manner in which I used the term "penetrating wound of the chest," and perhaps in a technical point of view, rightly so to a certain extent.

Respecting the value of the terms "penetrating wound of the chest," and "perforating wound of the chest," the perforation is exactly in proportion to the penetration, and the penetration to the perforation. A missile having penetrated into the pleural cavity by passing through the chest-wall, has equally, and no more, perforated the chest-wall, and "vice versa." So, the missile having passed through the lung, has to that same extent, penetrated its structure.

To speak of a wound as a perforating wound of the chest, is, technically, by no means completely distinctive, as it does not declare anything respecting the condition of the lung. It would seem much more correct to adopt the following terms, which I think would be obviously distinctive.

*A penetrating wound of the chest* is one in which the missile has perforated the chest-wall, and lodged.

*A perforating wound of the chest* is one in which the missile has entered the pleural cavity, and passed out again.

*A penetrating wound of the lung* is one in which the missile has pierced the lung without passing out of the chest.

*A perforating wound of the lung* is one in which the missile has passed through some portion of the lung.

So difficult is it sometimes to tell whether, in a perforating wound of the chest, the lung is involved in the injury, that, for all practical purposes, the terms *penetrating wound of the chest* and *perforating wound of the chest* are sufficiently distinctive.

In a diagnostic point of view they express all that the surgeon will usually care to aver in the majority of cases, and especially so under the disadvantageous circumstances attending practice on the battle-field.

In cases of perforation of the lung without perforation of the corresponding opposite points of the parietes, no surgeon would presume to decide whether the wound of the lung be a penetrating or a perforating one; for it is by no means uncommon to meet with a perforating wound of the lung, with only a penetrating wound of the chest, the ball having lodged in an opposite part of the chest-wall.

The surgeon who has had most experience with gunshot wounds of the chest, will not be the most positive in his diagnosis as to the course of the ball, judging either from the particular symptoms or from the location of the external wounds.

Only a short time since, on making a post-mortem examination of Private L. King, Co. I, 96th N. Y. Vols., I found that from the external wound of entrance below the middle of the left clavicle, the ball had passed over the arch of the pleura, beneath the clavicle, coursing over the spine, downwards and about two inches to the right of it, as far as to the fifth right rib, striking which, it was deflected transversely, recrossed the spinal column, entering the left pleural cavity, and penetrated the left lung.

Many cases of wound of the lung are at first accompanied with symptoms by no means commensurate with the severity of the case, whereas hemorrhage, hæmoptysis, painful breathing and coughing, with consecutive pleuro-pneumonia, may occur without any penetration of the chest whatever, but simply from indirect injury by concussion from a partially spent ball. It being sometimes so difficult to be certain as to the condition of the lung, whenever the symptoms indicate the probability of its being wounded, it is better to proceed as if it were a certainty.

Prof. Longmore, in common with all eminent authors, so far as I know, recommends the immediate closure of all incised and stabbing wounds of the chest, and says, "Not only the relief to the breathing, by rendering more complete inflation of the lungs practicable, which is the immediate effect of this operation in an incised wound of the soft parts of the chest and periphery of the lung, but the arrest of the hemorrhage, if this complication exist; together with the prevention of subsequent extended pleuritis and pleuro-pneumonia, are sought to be obtained by this means."

Now I would inquire what distinctive feature belongs to a gunshot wound of the lung which should prevent a similar relief of dyspnœa as is admitted to follow upon closure of the external wound in the case of an incised or stabbing wound of a similar character?

The admission of air, upon which the dyspnœa mainly depends, is indeed commonly more free in a gunshot than in an incised wound, and therefore demands more careful and immediate closure.

That the conditions and tendencies of the wounds are different, is obvious; that they cannot, in the nature of things, progress in the same manner, is equally plain; but none of the points of difference seem to afford any reasons rendering the admission of air less harmful in the one case than in the other.

It is a *fact* that, by closing a gunshot wound of the chest, dyspnœa, so far as it is dependent upon the presence of air in the pleural cavity, is promptly relieved; that hemorrhage, beyond a certain extent, is controlled; while it tends to the prevention, in part, of "subsequent extended pleuritis and pleuro-pneumonia," in proportion as the air as a cause is thereby excluded.

In speaking of the practice of accurately closing the outer wound in case of hemorrhage from gunshot wound of the lung, Prof. Longmore seems in one place to admit its desirability, and to recommend it as a matter of necessity where there is active hemorrhage. On the same page, however, I find it stated by the author, or quoted and adopted from Baron Larrey (in the absence of quotation-marks I cannot tell which), the following: "If bleeding is going on from its surface, neither the passage of air through the wound in the chest-wall, nor its restraint, can exert influence upon it."

This evident contradiction arose probably from an oversight; let us therefore, leaving that, inquire for a moment into the validity and correctness of the above statement.

When through the track of the ball, in a severely wounded lung, part of the inspired air is continually passing at every inspiration, and thence outward through the open wound, what conditions are thereby supplied favourable to the arrest of hemorrhage? *Cold? Rest? Pressure?* Evidently neither; although these are each as efficient for the arrest of hemorrhage in a gunshot as in an incised wound, the very opposite conditions are involved in the state above mentioned.

In the first place, the stream of air passing throughout the track of the ball in the lung is not *cold air*, but *warm breath*, fresh from the interior furnace of the lung. The benefit of *temperature* is therefore not secured;

and this, it seems to me, is one fatal objection to a theory based upon the advantages of keeping the external wound open, in order that the cold air may act as a styptic to the wounded vessels, the efficiency of which is set forth by the author of a book entitled "A Manual of Military Surgery, prepared for the Use of the Confederate Army by order of the Surgeon-General."

This outward-bound current of warm air, so long as it continues, effectually prevents *rest* of the parts, and tends either to prevent their formation, or to promote the loosening as fast as formed, of the clots in the track, by which nature attempts to arrest the flow of blood from the numerous vessels opening into it. So long as this condition continues, the blood which has found a means of exit at the external wound is induced to flow on in a steady current from its source.

If, however, the outer wound be closed, the blood poured into the pleural cavity is soon dammed up, and becomes clotted over the mouth of the wound of the lung, shutting the gates of the track. The blood then poured from the mouths of the vessels finding no exit into the pleural cavity, the track of the ball soon becomes distended with an accurately-fitting clot, moulded to the parts, and making steady pressure upon every open mouth of the bleeding vessels. This compels *rest*, and, acting as a tent, renders further flow impossible, except some large bronchus be involved, whence blood may for a time be expectorated. The walls of the track so protected are now in the most favourable condition for healing, the plug acting, to some extent, as a scab does to the parts beneath, when formed over an ordinary flesh wound, and being dislodged as soon as its object is accomplished.

In the case of an incised wound of the periphery of the lung, rest induces apposition of the cut surfaces, which is an additional means of arrest of hemorrhage.

In a gunshot wound, *rest*, for the same purpose, induces the formation of clot in the track, while, at the same time, the presence of the clot contributes to rest, extending as it does into every irregularity of the patulous walls of the lacerated track, exerting steady distension, and maintaining its fimbriated attachments with a good deal of tenacity.

Is it not evident that where the hemorrhage is as profuse as here supposed, that closure of the external wound is not only desirable, but that thereby arrest of the hemorrhage is inevitable?

It is very rarely, however, that the surgeon is called to treat a case of hemorrhage so profuse as that which I have described. In ordinary cases, the torn vessels soon cease to bleed—if very large, from general exhaustion, ending in death; if small, from retraction of their coats in the first place, then, upon the firm obstructing clot formed in the track, the surrounding air-cells freely expand, and thus, from within, a new hæmostatic force is introduced.

Is it not evident that, having thus plugged the ruptured air-cells and debarred the entrance of air into the pleural cavity through the external wound, the entire lung may expand more freely, and thus, at the same time, preserve its elasticity, and be prepared, should the opportunity arise, gradually to reoccupy the entire pleural cavity? Respecting closure of the external wound in cases of extreme hemorrhage, the surgeon will sometimes find it necessary to desist from this course, on account of the pressure of the accumulating blood upon the lungs, and its crowding of the heart. In such a case he must endeavour to preserve the balance of life by watching on which side the scale—whether from exhaustion, from loss of blood, or

asphyxia from compression of the vital organs—the downward tendency prevails.

Although the danger from asphyxia may be increased by closure of the external wound, the danger from hemorrhage may be so much *more* diminished, as to reduce greatly the aggregate risk of life; meanwhile, the lung may become increasingly tolerant, and the vital powers be so resuscitated as to improve the prospects of ultimate recovery.

The relief to dyspnœa from access of air through a gunshot wound of the chest is so uniformly secured by its closure as to need no comment. I will, therefore, pass on to consider some of the remarks of Prof. Longmore under the head of suppuration.

Prof. Longmore inquires, if we can expect a diminution or prevention of suppuration by shutting out external air, adding—"This is doubtless the case with incised wounds, but can we expect it to be with penetrating gunshot wounds?"

Is there anything in a gunshot wound not found in an incised wound of the lung which diminishes the suppurative effects promoted by the action of atmospheric air upon it? Does the gunshot wound confer any immunity upon the pleural lining of the cavity wounded, to the continuous action of atmospheric air upon it? If not, why is it not as injurious in a gunshot, as in the case of an incised wound; and therefore its exclusion of as much importance in the former case as in the latter?

The difference between the two cases is undoubtedly this, that in the gunshot wound the injury is of greater gravity, and of a nature rendering the parts peculiarly obnoxious to the deleterious action of atmospheric air, rendering its exclusion therefore so much the more desirable.

In an incised wound of the lung, the pleura and lung are (excepting the wound) in an otherwise healthy condition, the admission of air by compressing the lung, would not prevent apposition of the cut surfaces, but it would have a tendency to excite "general pleuritis and promote pleuropneumonia."

But in a gunshot wound of the same parts, we find in addition to this, a varying amount of contused, sphacelating, and dead tissue, besides a greater liability to the presence of foreign bodies, spiculæ of bone, pieces of clothing, &c.

The passage of renewed currents of oxygen through the whole track of the ball, and circulating throughout the pleural cavity, induces exaggerated sloughing, and increases the amount of tissue invaded, by the preliminary inflammation it excites in the neighbourhood of the wound.

The whole extent of the pleura being suddenly and continuously subjected to the same irritating cause, it becomes thickened and softened throughout, breaking down readily under the touch; the pus and blood in the cavity also become extremely fetid from the same cause, and a chemical is superadded to a mechanical irritant; this exerts an influence immediately depressing to the vital powers, the degree of which is proportioned to the frequency, rather than the volume, of the repeated currents of oxygen to which the parts have been exposed.

Is it not evident that the longer we can exclude these currents of air without incurring any greater danger from compression, we delay, in the same degree, the legitimate effects of their presence.

The known existence of certain causes of irritation and suppuration, such as spicula of bone, pieces of clothing, &c., which may have been carried into the pleural cavity, are only additional reasons for limiting the

amount of every other cause of irritation and suppuration as much as possible, and delaying that amount of it which may be unavoidable, to as late a period as practicable, in order that in the meantime, the constitutional powers may be rallied for the coming conflict.

It is strange Prof. Longmore should have devoted so much space to the condemnation of a hypothesis of his own construction, viz: that of allowing no means of exit for the pent-up discharges. The attributing such an idea to me must have resulted from a great oversight, as in the article referred to appears the following, in a distinct and separate paragraph.

"Should suppuration occur so as to occasion distressing dyspnœa, proceed to treat it in all respects as a case of empyema, introducing the trocar at the most dependent point, and taking special care to avoid the admission of air."

The entire plan of treatment I have ever based upon these two main points, exclusion of atmospheric air, and removal of collecting fluids, &c., principles which, I think, are fully in accordance with the inductions of science. The great trouble has ever been in the difficulty of carrying them out in practice; and it is this that I have laboured in some measure to overcome. Should I fail in my immediate object, I still have hope that my endeavours may conduce to such modifications in treatment as shall minister to the benefit of the patient, and help by exclusion to diminish the area of doubt and uncertainty surrounding the treatment of this class of cases and save future trouble to some one similarly impressed of repeating the same attempts.

As to the operation which I described in the article referred to being "*new*," that is a matter of very little concern. Although, however, Prof. Longmore has chosen to contest that point which indeed I did not then claim; he has not shown that it was ever performed or proposed before, or that any attempt had previously been made by such means to obtain healing of a gunshot wound by first intention.

It is my intention to enter into further particulars, and give definitely my views on this subject as soon as convenient; I think they will appear to be in harmony with established principles, although involving modifications in their application.

The exclusion of all foreign bodies from the pleural cavity; accumulating fluids, no less than atmospheric air. This, as far as practicable, is my aim. The common fault in practice has been an undue attempt to accomplish the former by inadequate means to the improper neglect of the latter. Whereas, both should be together attempted with such modifications as each particular case may demand, in order to counteract the most evident tendency to death from either cause respectively.

Progress is not consistent with haste in scientific investigations. I content myself therefore for the present with endeavouring to correct certain important misapprehensions which have evidently prevailed.

HEAD QUARTERS ARMY OF THE POTOMAC,
CAMP NEAR PETERSBURG, VA., *Sept.* 6, 1864.

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*Gunshot Wound of the Subclavian Artery.* Reported by ASA ALONZO SMITH, M. D., Acting Assistant Surgeon, U. S. A.

Private Levi Reylea, Co. D, 16th Pennsylvania Cavalry, aged 25, was admitted from City Point, Virginia, into the Satterlee U. S. General Military Hospital, Dr. J. J. Hayes, Surgeon U. S. V., in charge, August 20th, 1864. He was wounded August 16th, 1864, at the battle near

Malvern Hill, Virginia, by a Minié ball, that entered in front of the right clavicle, about one inch from the sternum, and remained in the body. A large amount of blood, according to his own statement, was lost at the time of the receipt of the wound.

When he entered the hospital the man's general health was good. His appearance showed that he had lost recently a large quantity of blood. In the right clavicular region, about one inch from the sternum, was a hole through which the finger passed under the clavicle, which bone was broken, backwards and outwards, over the upper side of the first rib, which bore a small rough spot. A great many very small pieces of bone were felt firmly fixed in the tissues around the track of the ball. In the right arm there was no pulse to be felt in any of the arteries; motion and sensation were abolished, though the man complained frequently of sharp pains shooting down the limb as far as to the ends of the fingers. Behind, the right scapular region was swollen and hard, something very like a ball being felt in the portion below the spine of the scapula. Auscultation and percussion showed the thoracic cavity to be untouched.

The man was kept in bed, water dressings being applied to the external wound, and directions given as to the use of compression in case hemorrhage should occur.

On September 1st several small pieces of bone, now perfectly loose, were removed; the largest about the size of a pea.

On the 7th, at 7.30 P. M., the man being quiet and lying on his back, there was a profuse hemorrhage from the wound, some 15 or 20 ounces of blood being lost in a few minutes. It was arrested by the nurse, by pressure with a narrow rolled bandage, as had been directed.

A consultation of the medical officers at the time in the hospital was called, and it was decided to keep up the pressure in the wound until the next day; the acting medical cadets were detailed to perform this duty, relieving one another hourly. The patient, although exceedingly weak, rested quite well through the night; brandy was freely administered; no blood was lost.

On the 8th, at 11.30, a consultation was again held, at which Dr. Walter F. Atlee, Consulting Surgeon to the Hospital, was present, and it was decided to place a ligature at once around the subclavian artery, between the wound and the heart, and after that to act as circumstances might indicate. The usual incisions were made for this purpose, but no artery could be found in the place usually occupied by the subclavian. On sliding the finger down the scalenus muscle against the first rib it perceived an organ irregularly rounded, but not hollowed and not pulsating, and attached quite firmly to the parts around. With difficulty, and after much consultation as to what should be done, a thread was passed around this organ, it was left for a few moments, and then removed without having been tied. After long hesitation it was determined to place a ligature around a vessel, most probably the superior scapular, beating in the upper part of the incision, and running in such a direction that it might open into the wound. This was the only pulsating vessel anywhere to be felt, on exploring both the wound and the incisions made, by the finger. There was no hemorrhage during the operation, although, of course, there was no compression made between the heart and the wound. One small vessel that spouted in the subcutaneous cellular tissue after the first incision was tied immediately. During the operation the patient was kept more or less under the influence of chloro-

form, mixed with ether; one part of the former to three, by measure, of the latter.[1]

The patient was then left in this condition; cadets being detailed as before to watch over him.

An hour after the operation there was considerable reaction; the general expression was good; the body much warmer; the pulse 98; in the afternoon the pulse was at 95, with more volume and more strength.

At 5.15 P. M. the hemorrhage recurred, and before proper compression could be exercised, a large amount of blood was lost. After this the pulse was scarcely perceptible; the face was bleached and covered by heavy drops of sweat; the extremities cold; thirst intense; and the patient very restless. He continued in this condition, the mind remaining clear until the following morning at 5 o'clock, when, without any further loss of blood, he began to sink rapidly, and died at 8 o'clock.

At the autopsy, the clavicle was found splintered; the first rib slightly touched just outside of its tubercle, and the scapula perforated one inch below the middle of its spine. The subclavian artery has been lacerated by the passage of the ball as it crosses the first rib; it was here entirely plugged up for a space of two inches, and looked like a sloughing mass, having a number of very small pieces of bone scattered through it. The hemorrhage had come from the vessel within the scaleni muscles, where an opening was found through the coats of the vessel, the product of ulceration. The subclavian vein had been torn away by the ball. The cavity of the chest and its contents were perfectly healthy.

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*Hydrops anterior of Both Eyes.* By PHILIP S. WALES, M. D., Surg. U. S. N.—A man was admitted, Jan. 3d, 1863, into the Portsmouth, Va., Hospital, who two months previously had received a severe blow across the eyes by a piece of wood. Conjunctivitis resulted, which resisted all treatment for a long time, but when he came in there was no inflammatory action going on in the eyes, and only two enlarged vessels crossed the sclerotica of the left eye, passing upon the cornea; sight was entirely gone in this eye, and greatly impaired in the right. Both corneas were perfectly transparent, except a small opacity the size of a split BB shot on the left, out of the axis of vision. The anterior chambers were greatly increased in size in all directions, from their gradual and equal expansion. The irides floated loosely in the aqueous humours and trembled visibly upon any movement of the eyes, giving them a very peculiar appearance. Their diameters were also much increased. There was deep-seated and constant pain in both eyes, increased by pressure, the globes feeling hard like solid bodies. The light was rather agreeable to the eyes than otherwise.

The method of treatment pursued was as follows: With a cataract needle I punctured the cornea, two lines from the iris, discharging a small quantity of the humour sufficient to remove all pressure from that membrane,

[1] The observations made by Dr. M. J. Grier, A. A. Surgeon, who administered the anæsthetic, are of interest. "At the commencement, pulse 112, irritable, quick, and feeble; rapidly rose to 130, and became thready and almost imperceptible; removing the anæsthetic it soon regained its former condition. Sometimes, when the administration was prolonged, the pulse reached 160, always falling below 115 within a few seconds on the free admission of atmospheric air. The patient was *very* susceptible to its influence, and was very easily controlled by an occasional application of the sponge. Towards the close of the operation it was deemed advisable to give brandy, under which the pulse changed from 115 to 100, gaining in strength and volume. The patient was covered with cold sweat."

which permitted it to subside slightly. By this simple operation all pain was immediately removed, showing that it depended upon the ocular distension. A course of tonic medicines was prescribed, and at the end of 48 hours after the operation, gentle compression upon both eyes with a light, suitable bandage. The relief was prompt, but in three or four days the fluid again accumulated with a return of pain; three operations were done, with the same results, when at the fourth recurrence the patient was urgent for something to be undertaken for his permanent benefit. Extirpation or evacuation of the humours suggested itself as a radical cure, and having them always at my command as a dernier resort, I conceived the idea of injecting the anterior chamber with nitrate of silver, in order to alter the vital activity of its secretory membrane and bring about a healthier tone in the vessels. I made choice of a sol. nitrate silver, gr. ij to the ounce of water, although aware that there must be chemical change from the amount of chloride of sodium contained in the aqueous humour, about 1.15 per cent. estimated along with the alcoholic extractive matter, according to Berzelius.

I first made an opening into the inferior segment of the left cornea with Beer's knife, and, with a small hypodermic syringe, threw in the injection, perhaps half of the aqueous humour having previously escaped. As expected, flocculi of the chloride of silver filled the anterior chamber, and presented a grayish or foggy appearance. The eye was immediately closed, and cold water applied. In an hour I was sent for to see the patient, who complained of excruciating pains in the eye, was vomiting, with a cold, clammy perspiration standing upon the whole surface; pulse about 50. Applied twelve wet cups to temple and gave morphia, gr. i, immediately. Pains continued until bed-time, when the morphia was repeated and he soon fell asleep. Next morning was almost free from pain. Continued the cold water, and applied six wet cups. Night—slept without opiate. Morning—free from pain. Continued cold water.

I did not open the eye until the sixth day, when I found all haziness of anterior chamber had disappeared. There was a little cloudiness of the cornea, the incision having healed, while a visible shrinking of this membrane had taken place. No iritis.

The object of the operation, relief of pain, was obtained, and the eyeball conserved and in such good condition that one had to look closely at it to detect imperfection—certainly preferable to extirpation and a glass eye.

This man, about two months afterwards, passed from under my care, but up to that time he had not been troubled, and he himself stated that since the last operation he had enjoyed a perfect freedom from pain unknown since the injury.

In such a case as the above I would pursue this novel treatment in preference to ruining the organ, and although the eye upon which I had operated was totally blind, can we not hope that many eyes, otherwise hopeless, may not only be saved from the knife, but vision restored to them by injections of solutions of various salts?

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*Case in which the Uterus was Extruded without being Emptied of its Contents.* By E. M. JENKS, M D.—On the 12th day of August, 1863, I was called in consultation with Dr. Tefft, of Sturgis, Mich., to a case of childbirth where the woman had been in labour for four days, having had for a medical attendant during *all* that time a homœopathist. Upon reaching the house we found the *doctor* there, who wisely informed us before

entering the lying-in room that "the waters had broken some forty hours before," and, to use his own language, "labour was going along all right until the head came outside; but there was *prolapsus of the vagina*, which would not let the head pass any farther. I tried to stretch the vagina over the head, and afterwards put on liniment to soften it, and then tried, but could not get the prolapsed vagina over the head."

The patient, Mrs. S., æt. 23, was in labour in the eighth month of her second pregnancy. Her first labour occurred at full term, being an easy and natural one. Her general health has been good. She was, as might be expected, nearly exhausted by the length of time she had been in labour. I made a vaginal examination, and found the uterus occupying its proper position; the os uteri dilated about one and a half inch in diameter, soft and dilatable; the head was in the first position; the soft parts were dry and quite tender, probably having derived no benefit from the *doctor's* manipulations or liniment. There appeared to be nothing to prevent ready delivery, except the absence of labour pains and the great exhaustion of the patient. Upon auscultating the patient's abdomen I could not discover any signs of fœtal life. By the administration of alcoholic stimulants and ergot her strength was sustained and labour pains were re-established. I then administered chloroform while Dr. Tefft attended to the delivery of the fœtus. I made no further examination until Dr. T. remarked "that the head had passed the soft parts, but that there was something unusual." Upon examining I could distinctly feel the head and shoulders external to the body, yet surrounded with something, I could not at first tell what. Ocular examination revealed the fact that the head and shoulders were protruded, but *still surrounded by the uterine covering;* the os uteri was dilated no more than at the first examination; the fœtal head could be distinctly seen; the powerful propelling force of the abdominal muscles was pushing the gravid uterus still further into the world. Yet what added greater gravity to the case was that at this time I could distinctly see the overstrained uterus beginning to tear at the anterior edge of the os uteri. Fearing a rupture of the uterus I immediately encircled the fœtal head with my hands to prevent any further propulsion of the gravid uterus, and if possible uterine rupture, and directed Dr. Tefft to reduce the head by craniotomy, which he immediately did, and by means of the crotchet easily delivered the child through the circle made by my hands. Not until the afterbirth was removed by the hand was the uterus returned to the pelvic cavity. I then kneaded the abdomen and felt the uterus contract to the usual size after childbirth. There was no excessive hemorrhage, and no further unpleasant symptom. Convalescence was early established, and the patient recovered her full quota of health and strength.

Upon inquiring into the history of this case I learned that at different times during her pregnancy the uterus had been prolapsed, and that at one time she had bruised this dependent tumour, an abscess followed which suppurated and discharged for weeks and then healed. As the result of this injury the fibrous inelastic bands of the cicatrix prevented the expansibility of the os uteri sufficiently for the birth of the child.

I have been unable to find, in the limited number of obstetric works I have examined, any case of midwifery recorded, presenting the peculiarities of the one I here report. Prof. Isaac E. Taylor, of New York, told me that a similar case occurred in the lying-in wards of Bellevue Hospital. Prof. Timothy Childs, of New York, also informed me that he had known of a case somewhat similar. I did not learn the particulars of either of.

the cases mentioned by Profs. Taylor or Childs; yet my impression has been that the similarity of both the cases mentioned by them to this one consisted simply in a less degree of prolapsus, there not being present that great amount of prolapsus which existed in the case, or a non-dilatable os uteri, or rather dilatable only to a certain extent.

It has long been taught that the effect of ergot internally administered is simply to increase the parturient action of the uterus. In this case the re-establishment of the labour pains was undoubtedly due to the ergot administered; yet it does not seem reasonable to suppose that the uterine contractions alone would expel the uterus six inches or more beyond the vulva.

Detroit, August, 1864.

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## DOMESTIC SUMMARY.

*Imperforate Anus and Malformation of Rectum.*—Dr. J. Mason Warren relates (*Boston Med. and Surg. Journ.*, July 14, 1864) the following cases of imperforate anus, with malformation of the rectum, which are interesting in connection with the question of attempting relief by a surgical operation.

Case I. *Imperforate Anus with Abnormal Opening of the Rectum Externally.*—A female child, now 2½ years old, was born with a small fistulous opening directly behind the vagina, and half an inch in front of the normal position of the anus, through which the fecal matter was discharged very slowly and with much difficulty. The child was therefore brought to the hospital, where the opening was enlarged by one of the surgeons, who enjoined it upon the parents to keep it from closing up again by the daily employment of tents. In spite, however, of the moderate amount of attention which was given it, the aperture became gradually contracted so as to cause much distress whenever the bowels were evacuated, and to lead the parents to bring the child again for operation, in the spring of 1863, when it was about two years old. The operation was performed by passing a curved instrument into the fistulous opening, turning it backwards, and pressing the intestine down upon its point where the sphincter ani muscle should naturally be situated. Here a dissection was made until the sound was exposed, and the intestine freely opened by a crucial incision. The intestine was now attached by two or three points of suture to the skin, and a tent passed well into the opening. The child bore the operation well. After a few days the tent was removed, and the daily use of bougies, gradually increasing in size was commenced. By the end of the third week it became difficult to introduce the bougie, owing to the very powerful resistance offered by the sphincter muscle; this, however, always yielded to pressure, and the removal of the bougie was followed by a free discharge of fecal matter. At the end of a month the child left the hospital, the mother being requested to bring her twice a week in order to have the bougie passed and the abnormal opening cauterized for the purpose of closing it. Three months afterwards the case was lost sight of, a small fistulous opening still remaining, through which there was occasionally a slight discharge; the new anus performed its functions perfectly.

Case II. *Imperforate Anus, with Rectum opening into the Vagina.*—In June, 1863, a fine, healthy girl, six weeks old, was brought to me, with the rectum terminating in the vagina. An incision had been made by the attending physician at the point where the anus would be naturally situated, but he had not succeeded in establishing the passage. On account of the very early age of the child, and the small size of the organs, it was very difficult to determine the exact condition of the parts. The mother said that the child was perfectly well, except that the discharges took place through the vagina. A probe passed into the vagina entered about two inches: in front of this another probe could be passed into the urethra, these two passages being entirely distinct. After considerable

manipulation it was found that the whole posterior wall of the vagina, and the corresponding anterior wall of the rectum, were wanting. The operation for the restoration of the natural passages was done as follows: A large silver hook with a ball at the end, was passed into the vagina and forced down against the spot at which it was proposed to make the new opening. Here it could be indistinctly felt through the thick mass of the soft parts which intervened. A crucial incision was made through the skin, and the soft parts dissected to either side until the silver ball, pressing down the intestine, was felt in the wound, the wall of the intestine only intervening. A small aperture was now made in the gut and the hook passed through, so as to hold the parts in position. The aperture in the intestine was now enlarged and its margins stitched to the integuments by four sutures. A plug was then introduced into the opening to the depth of an inch and a half or two inches. After the operation a free discharge took place from the vagina, showing that the plug would not interfere with the passage of the feces while the new anus was being established.

This case has been under observation until the present time (now nearly a year). A large and well-formed canal has been established in the normal position, through which well-formed solid discharges take place from time to time, while the more liquid feces still make their way through the vagina. The child is still too young, and the vagina at present too inaccessible for any attempt to be made to close the abnormal passage; this it is proposed to do at a later period. Meanwhile the child enjoys perfect health.

CASE III. *Imperforate Rectum.*—April 9, 1864. A very small child three days old, which had not yet nursed, was brought to me with the rectum imperforate about three-quarters of an inch above the anus. The abdomen was distended almost to bursting. The child quiescent. A finger being introduced into the anus, encountered the obstruction, but there appeared to be no rounding out of the septum, indicating the continuance of the canal above. It was, however, decided to make an exploratory puncture with a trocar. On the instrument being thrust in, the meconium began slowly to flow out, until at least half a pint had escaped, when on pressure being made on the abdomen flatus followed. The finger was now passed up above the obstruction so as to freely dilate it. No large cavity or depot of the fluid could be detected. It was advised that the finger should be passed up once or twice a day, which the medical attendant promised to do, and also to report the course of the case.

The child took food immediately after the operation, and for a time seemed relieved. It died, however, the same night, about twelve hours after the operation. On examination, a quantity of blood was found in the abdominal cavity, but no meconium. A fibrous cord about an inch long intervened between the rectum below and the cul-de-sac of the imperforate intestine above. The great distension of the intestine by meconium had forced it down into the pelvis, bringing it in contact with the bottom of the anal cavity. On thrusting in the trocar the intestinal contents freely escaped, but on the withdrawal of the canula the upper portion of intestine retracted, and the aperture in it closed so as to be with difficulty distinguished. The oozing of blood into the abdominal cavity probably took place from the lower aperture. The very unusual state of the parts disclosed by the autopsy showed that no operation could have been of service.

CASE IV. *Imperforate Rectum.*—May 12, 1864. A female child not quite 24 hours old, was lately brought to me with imperforate rectum. The abdomen was quite distended, vagina and anus natural; the little finger could be passed half an inch within the anus, when it was suddenly arrested. When the child strained a sensation was felt of something pressing down on the finger, but it did not convey the impression of a portion of intestine distended with fluid. On passing the little finger of the other hand into the vagina, the uterus could be distinctly felt as in its natural position. The finger could then be passed over the finger in the anus against the spine, but detected no tumour; nor could any appearance of distended intestine be distinguished elsewhere, although the finger could be turned round and felt through the parietes of the abdomen. A probe was passed a little way into the urethra, but did not penetrate the bladder, although urine, thick and apparently semi-purulent, was discharged when the

examination was commenced. It was thought possible, but not probable, that the intestine might communicate with the bladder. Under the circumstances no operation was advised. Dr. D. W. Cheever, who had examined the patient the day before, had already given the same opinion.

This patient lived nine days, taking little or no nourishment, the abdomen becoming gradually more and more distended. On post-mortem examination, the intestine was found to terminate in a cul-de-sac between one and two inches above the imperforate anus; the sigmoid flexure, instead of being in its proper place, was found transposed to the right iliac region, where it lay in contact with the right side of the vagina, from which it could readily have been reached and punctured. A probe was easily passed to the fundus of the uterus, the os and cervix being very large. I was surprised to find with what ease the little finger could be passed without violence to the very bottom of the vagina, a fact which may be of material importance in elucidating some of these very obscure cases.

The specimens, together with that last mentioned, are now in the Warren Anatomical Museum.

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*Successful Ligation of the Innominata.*—Dr. D. L. Rogers, in a letter to Prof. V. Mott (*Med. Times and Gaz.*, Aug. 20, 1864), communicates a brief notice of the successful ligation of the innominata by Dr. A. W. Smith, one of the surgeons of the Charity Hospital, New Orleans.

The subject was a mulatto man, æt. 33, with a large aneurism. On the 15th of last May, Dr. S. applied a ligature to the arteria innominata and to the right carotid about one inch above its origin. Hemorrhage from the wound recurring, Dr. S., on the 19th of July, ligated the vertebral artery. The patient, it is stated, recovered.

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*Remarks on the Standard Operations for Cataract, and particularly the Method proposed by Mooren and Jacobson.*—Dr. Julius Homberger gives (*American Journal of Ophthalmology*, April. 1864) an account of the operations of Mooren and Jacobson for cataract. We have already (see No. of this Journal for January last, p. 261 *et seq.*) so fully described these operations that we need not repeat the remarks of Dr. H.

Dr. H. states that these methods have been so successful in his hands that he has felt it to be a duty to make this success known. He has formed a more favourable estimate of these operations than we have been led to entertain.

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*Resection of One Inch of an Imperfectly United Tendo-Achilles and Successful Treatment by Sutures.*—Dr. Warren Webster, Assistant Surgeon A. S. A., records (*American Medical Times*, September, 3, 1864) a case of this. The subject of it was a half-breed Indian, who had ruptured the tendo-achilles in running a foot-race. No regular treatment had been practised. When the patient was seen by Dr. W. "there was an intervening gap between the divided ends, of about an inch in length, where but little plastic matter seemed to have been poured out to fill up the space. The uniting bond was so elongated and weak as to render the limb powerless in progression. I resolved to expose the parts by a free incision, remove the slight connecting medium, pare the retracted extremities, and endeavour to unite them by the introduction of sutures of silk. The operation of bringing the severed ends in contact after the removal of the intervening substance was attended with considerable difficulty. This, however, was accomplished by placing the limb in a thoroughly relaxed position, and inserting two strong ligatures through the ends of the tendon about three lines from the extremities. The parts were thus approximated, and the relaxed position of the limb was maintained by an apparatus consisting of a ring of leather placed around the thigh, above the knee, from which a cord was attached to a loop in the back of a slipper. The gastrocnemii muscles were also surrounded by a firm bandage. This apparatus was used for six weeks, when the patient was allowed to walk about, wearing a high-heeled shoe, for three weeks longer.

"After having tied the ligatures one end of each was cut off, and the others withdrawn, as practised in the ligation of vessels. The incision was then united its entire length (which was about three inches) in the most exact manner pos-

sible. The ligatures were removed on the twenty-fifth day, and during the greater part of that time the wound discharged purulent matter. The fourteenth week after the operation the patient walked with scarcely any lameness, and the tendo-achilles appeared to be perfectly united."

*Severe Gunshot Wound; Recovery.*—Dr JAS. M. SHARKEY reports (*Boston Medical and Surgical Journal*, September 1, 1864) the following remarkable case:—

Judge A. M. H., æt. 58, a resident of San Francisco, California, received, July 19, 1853, at the hands of Capt. C. M. W. a gunshot wound in the left chest from a rifle, at the distance of fifteen feet; the bullet was supposed to run from thirty to forty to the pound.

"The ball entered the back about one and a half inch from the spine on the left side, striking the upper edge of the eleventh rib and deflecting upwards, striking the lower edge of the tenth rib, thence continuing the line of deflection upwards, passing through the pleura and substance of the lung, and lodging under the skin about half an inch from the left nipple, whence it was removed by a very trifling incision. The points of ingress and egress indicate the deflection and track of the ball. It was apparent, from the symptoms presenting themselves, that the intercostal artery, the pleura at both points posteriorly and anteriorly, and a plexus of the great sympathetic nerve were injured, with complete perforation of the left lung. It was also apparent that the pericardium was touched and bruised, but not penetrated. This remarkable wound did not bring the gentleman to the ground. Deeming himself fatally wounded (with remarkable coolness and self-possession he walked a full block in distance without aid or assistance before he fell, it being dark and no person immediately present), he made what he supposed a dying declaration or statement as to the manner of receiving the injury and the name of the perpetrator. On being removed to his residence, he received such medical assistance as was at command in Stockton. He was confined to his bed about six weeks, after that period was taken out occasionally in a carriage, but in a remarkably feeble state, which continued for a long time, and up to the present he still suffers from the shock to the nervous system, though in other respects he has the appearance of better health than he has enjoyed for a number of years.

"A considerable quantity of blood was discharged into the cavity of the chest, and fully two-thirds of the left lung was rendered useless for a long time, caused by the filling of the cells. The chest also became tympanitic, with effusion in the posterior part. These results have been removed to a considerable extent by absorption.

"Two months after receiving this severe injury, he was seized with a rheumatic affection, connected with slight paralysis in the right arm and hand. This attack, doubtless developed by the nervous shock produced by the wound, as it was the first attack of the kind he experienced, has been uncommonly obstinate. He is still crippled with it, but is completely cured of dyspepsia, with which for a long period preceding the injury he was afflicted. For years he has been very feeble and fragile, weighing about 135 pounds, is of a bilious, nervous temperament, the mental largely predominating over the physical, a victim of dyspepsia for the last thirty years and under almost constant treatment for that disease; withal exhibiting wonderful mental and physical elasticity, often wearing out healthy and able-bodied men in the practice of his profession. He is also possessed of great coolness and firmness of purpose, notwithstanding his temperament. These attributes are necessary to be understood, as they doubtless enter largely into the pathology of his case."

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## BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, consists of the following Physicians:—

| | | |
|---|---|---|
| Edward Reynolds, M. D. | J. B. S. Jackson, M. D. | Charles G. Putnam, M. D. |
| John Jeffries, M. D. | J. Mason Warren, M. D. | Morrill Wyman, M. D. |
| S. D. Townsend, M. D. | D. H. Storer, M. D. | Henry J. Bigelow, M. D. |

At the Annual Meeting of the Committee on Wednesday, August 3d, no premium was awarded.

The following are the questions proposed for 1865:—

1. *Recent Advances in Ophthalmic Science.*
2. *Pyemia.*

Dissertations on these subjects must be transmitted, post paid, to Edward Reynolds, M. D., *on or before the first Wednesday of April*, 1865.

The author of the best dissertation considered worthy of a prize on either of the subjects proposed for 1865, will be entitled to a premium of *ninety dollars*, or a gold medal of that value.

The following questions are proposed for 1866:—

1. *Treatment of Painful Affections of the Nerves following Gunshot Wounds.*
2. *Cerebro-Spinal Meningitis.*

Dissertations on these subjects must be transmitted, post-paid, to Edward Reynolds, M. D., *on or before the first Wednesday of April*, 1866.

The author of the best dissertation considered worthy of a prize for 1866 will be entitled to a premium of *ninety dollars*, or a gold medal of that value.

Each dissertation must be accompanied by a sealed packet, on which shall be written some device or sentence, and within which shall be inclosed the author's name and residence. The same device or sentence is to be written on the dissertation to which the packet is attached.

The writer of each dissertation is expected to transmit his communication to the Chairman of the Committee, in a legible handwriting, within the time specified.

All unsuccessful dissertations are deposited with the Secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826, the Secretary was directed to publish annually the following votes:—

1st. That this Board do not consider themselves as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2d. That in case of publication of a successful dissertation, the author to be considered as bound to print the above vote in connection therewith.

J. MASON WARREN,
*Secretary.*

## HARVARD UNIVERSITY.

### MASSACHUSETTS MEDICAL COLLEGE.

The annual course of Medical Lectures of Harvard University will commence at the Massachusetts Medical College, in North Grove Street, Boston, on the first Wednesday of November, 1864. The regular course will be as follows:—

| | | |
|---|---|---|
| Obstetrics and Med. Jurisprudence, | by Professor | D. Humphreys Storer, M. D. |
| Morbid Anatomy, | " " | John B. S. Jackson, M. D. |
| Clinical Medicine, | " " | Henry I. Bowditch, M. D., and |
| | " Adj. Prof. | Calvin Ellis, M.D. |
| Anatomy and Physiology, | " Professor | Oliver W. Holmes, M. D. |
| Theory and Practice of Medicine, | " " | George C. Shattuck, M. D. |
| Surgery, | " " | Henry J. Bigelow, M. D. |
| Chemistry, | " " | John Bacon, M. D. |
| Physiology and Pathology of the Nervous System | " " | C. E. Brown-Sequard, M. D. |
| Materia Medica | " " | Edward H. Clarke, M. D. |

Demonstrator, David W. Cheever, M. D.

Clinical, Medical, and Surgical Instruction will be given at the Massachusetts General Hospital, with Surgical Operations.

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Students are requested, upon coming to Boston, to call upon the Dean.

D. HUMPHREYS STORER, *Dean of the Faculty,*
Oct. 1864. *No.* 132 *Tremont Street, Boston.*

## MEDICAL COLLEGE OF OHIO.

The forty-third annual session will commence on Tuesday, November 1. The clinical course begins October 15.

George C. Blackman, M. D., Professor of the Principles and Practice of Surgery and Clinical Surgery.
James Graham, M. D., Professor of Theory and Practice of Medicine.
M. B. Wright, M. D., Professor of Obstetrics and Diseases of Women and Children.
W. H. Gobrecht, M. D., Professor of Anatomy.
C. G. Comegys, M. D., Professor of Institutes and Clinical Medicine.
Theophilus Parvin, M. D., Professor of Materia Medica and Therapeutics.
———— ————, Professor of Surgical Anatomy and Military Surgery.
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THE

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"Influenced by these motives, the author has, in this volume, endeavored to present not simply his own opinions, but also those of the most distinguished authorities in the profession; so that it may be considered as a digest of the theory and practice of Obstetrics at the present period. In the fulfilment of this design, the plan adopted is exceedingly simple. It consists in detailing the natural history of woman, as far as the important functions of gestation and parturition are involved, and deducing from the facts thus elaborated, those principles which should govern the obstetrician. Much attention has been devoted especially to the natural process of labor, so as to elucidate the *modus operandi* of those powers by which the fœtus is expelled, and to detail the varied physical and vital resistances offered to the descent and delivery of the child, in all the presentations and positions which it can possibly assume. This comprehends what is now known as the 'Mechanism of Labor,' which intimates that, although the expulsive powers and many of the resistances made to the process of descent depend on 'vital forces,' yet these all act in perfect harmony with the laws of mechanics. It is the knowledge of this mechanism, in all its minute details, which can alone furnish correct principles for the guidance of the accoucheur. We heartily endorse, therefore, the declaration of M. Baudelocque, that the principles of obstetrics 'are sure, all the operations of which may be carried, in a manner, to a geometrical certainty;' and also to that of M. Velpeau, who affirms that these same principles of obstetrics 'give to the resources it employs a degree of precision which causes it to approach in certainty the mathematical sciences.'

"The study of the mechanism of labor is, however, one of acknowledged difficulty. The best minds of the profession have been exerted for its elucidation, and, although much has been done, we must believe that many deficiencies exist, and that many errors are still sanctioned by high names, which have led to corresponding errors in practice.

"The 'Mechanism of Labor' will be found to occupy considerable space in the ensuing pages, in reference not merely to presentations of the vertex, to which attention has been too exclusively confined, but to all the varieties of presentations and positions to which the fœtus is liable. Many may object to these minute details, but the great advantage, and even necessity of accurate information upon every point relating to the delivery of the fœtus, will not be questioned by those who have had experience in tedious and difficult labors."

The plan adopted by the author to carry out and illustrate these objects can be estimated from the condensed summary annexed of the Contents and List of Illustrations. That this plan has been elaborated in his most careful and successful manner

## HODGE'S OBSTETRICS—Continued.

will be apparent from the subjoined recommendations. The work may therefore be regarded as the fullest practical exposition of the subject accessible to the American physician, indispensable to those who, in the exigencies of practice, must require a work for consultation and reference.

From A. Hall, M. D.,
*Prof. of Obstetrics in McGill University, Montreal, Canada, Aug.* 22, 1864.

I have very carefully perused it, and can come to but one conclusion—that it is, without an exception, the *chef d'œuvre* of obstetric works, entering more fully and minutely into the mechanism of labor than any other work with which I am acquainted; and thus thoroughly and intimately grounding the student in the elements of this branch of his professional knowledge, it must largely contribute to his accomplishments as a future accoucheur.

Independently, however, of this highly valuable portion of the work, the remainder is replete with scientific information, the largest proportion of which is of essential value to the practitioner.

In fact, I know of no work of more real intrinsic value to the student and practitioner, and I feel persuaded that it will rapidly acquire a high position in our collegiate literature. I need hardly say that, entertaining such views, it will give me the greatest pleasure to bring the work prominently before my class.

From H. Kirke Cushing, M. D.,
*Prof. of Obstetrics in Cleveland Medical College, Aug.* 11, 1864.

I purchased the work as soon as it was published, convinced that it would be valuable. Such examination as I have been able to give it confirms the belief I have long had that Professor Hodge could give to the world one of the best possible works on Obstetrics. I am proud of this American contribution to the department of Obstetrics.

The work of Dr. Hodge is in the highest degree creditable to its author, and confers no trifling honor upon the school whose chair of Obstetrics he so long and so ably filled. It cannot fail to become, at least with American practitioners, a standard authority; the author being as much distinguished for his intimate acquaintance with his subject, in all its details; his long experience and admirable skill in the practice of Obstetrics; his entire accuracy and perfect faithfulness in the report of his experience—in its bearing, especially, upon every unsettled question, whether relating to the science or to the art of Midwifery. They who shall rise from a careful study of the mechanism of labor as described by Dr. Hodge in the work before us without clear and exact views in regard to it, will scarcely be able to master the subject after the most careful demonstration of it by the most accomplished teacher. It constitutes, very certainly, one of the fullest and most complete treatises on the principles and practice of Obstetrics that has yet appeared in either Europe or America; and we may safely add, the most reliable. On whatever question in midwifery the practitioner may consult it, he will find always the needed information, and may repose the fullest confidence in following it that he will not be led into grievous error.—*Am. Med. Journal*, July, 1864.

Dr. Hodge having been engaged for thirty-one years in the teaching of Obstetrics, has very justly thought that the results of his large experience and reflections might be of advantage to the profession. These he has therefore communicated in a handsome, well illustrated volume. An excellent text-book; while he shows that in the management of parturient women he has been guided quite as much by his personal experience as by the teachings of other men. A valuable contribution to medical literature. It gives evidence of very hard work, and it shows that Dr. Hodge may say, in the words of Baudelocque, "though the reading of authors has been of great use to me, it will be found that the study of nature has been of much more."—*Lancet* (*London*), Aug. 20, 1864.

Great labor has been bestowed upon the preparation, and great expense incurred in the publication of this work. It is astonishing that such an extensive and complete treatise upon any branch of medical practice should appear at such a time, and shows that the medical profession of America are anxious to be in possession of all that is known upon the subject. We have no work in our language so extensive and complete upon the art and practice of Obstetrics; and though several works of great merit have appeared within the last few years, still, no medical library can be considered complete without this volume.

The illustrations are numerous and complete; as an illustrated work, it is superior to any which has appeared. We should be glad to give a list of the subjects represented, but suffice it to say that everything desirable has been faithfully and naturally represented by lithographic plates, prepared with great accuracy and care. On this account, as a text-book for the student and young practitioner, it is of incomparable value.—*Buffalo Med. and Surg. Journal*, July, 1864.

More time than we have had at our disposal since we received the great work of Dr. Hodge is necessary to do it justice. It is undoubtedly by far the most original, complete, and carefully composed treatise on the principles and practice of Obstetrics which has ever been issued from the American press.—*Pacific Med. and Surg. Journal*, July, 1864.

The work is published in quarto form. A leading feature will strike the reader in the lithographic figures from original photographs, which illustrate more perfectly than the ordinary wood-cuts ever did, the anatomy of the parts involved, and the mechanism of labor. The mechanical execution throughout is fully equal to the best work, for which the enterprising publishers are so justly celebrated.

We have examined Professor Hodge's work with great satisfaction; every topic is elaborated most fully. The views of the author are comprehensive, and concisely stated. The rules of practice are judicious, and will enable the practitioner to meet every emergency of obstetric complication with confidence. —*Chicago Med. Journal*, Aug. 1864.

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